The Builder.

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The Trades connected with Building, and the Numbers Employed Therein.

IN a former article we showed in detail the number of persons in England and Wales who are occupied in the building trades, strictly so called, and we intimated that on another occasion we should review the various occupations which, though not strictly included under the building trades, are, nevertheless, more or less connected with them.

In proceeding now to redeem our promise, we may first mention the exceptional case of the thatchers, whom the Census authorities place, not amongst the occupations connected with building, but amongst those engaged in the hay and straw trades. Part of this class,—those whose principal occupation is with the covering of ricks of hay and straw,—belong to the agricultural interest. The remainder,—those principally engaged in the thatching of cottages, barns, and outbuildings,—belong as strictly to the building trades as slaters and tilers. It has, however, been impossible to distinguish the one class of thatchers from the other. Their total numbers in 1861 were 5,355, while in 1871 they were reduced to 4,148. This decrease of more than 20 per cent. in ten years is no doubt due in a large measure to the increasing substitution of slate and tiles in place of straw for the roofing of cottages and farm buildings.

Another occupation, not included by the official writers, in the building trades, but which is beyond doubt very intimately connected with them, is that of civil engineering. In 1861, the civil engineers of England and Wales were 3,329 in number. In 1871 they had increased to 5,234. There was not one female amongst the number. The increase in this profession has been nearly 60 per cent. in the ten years. This enormous addition (1,905 persons) in so short a period, is not surprising when we remember the gigantic engineering works which have been carried out in that time; but there seems every likelihood, unless a considerable per centage of the younger members should in future find a career in the colonies and the less developed countries beyond the seas, that the ranks of the profession will before long become overcrowded in this country.

We now come to several distinct classes of trades the object of which is either mainly or partly to supply the builder with his materials. And, first, we will take those who deal with timber. The timber merchants and wood dealers numbered 10,055 in 1861, and 12,859 in 1871,—an increase of 2,804 persons, or more than 25 per cent. in the ten years. Of these numbers 366 were women in 1861 and 840 in 1871. The sawyers, on the other hand, have diminished in number. There were 31,647 of them in 1861 (12 of them women), and only 27,965 in 1871 (16 of them women). This decrease of 3,682 persons, occupied in sawing, is doubtless to be attributed to the more general introduction of steam-power in this occupation in recent years. The wood-turners, again, decreased from 7,684 in 1861 (56 being women) to 7,350 in 1871 (141 of whom were women), and this reduction may be set down to the same cause as in the previous instance. The lath fence and hurdle makers, on the other hand, have increased in number from 2,749 in 1861, to 3,023 in 1871. Altogether these workers and dealers in timber numbered rather more than 52,000 in 1861, and very nearly as many in 1871.

The next class of occupations partly or principally engaged in supplying the builder with his materials are those which deal with stone, clay, lime, and other minerals. The number of stone quarriers rose from 22,138 in 1861 (65 of them women) to 25,681 (none of them women) in 1871,—an increase of more than 3,500 in the ten years. The number of quarry-owners returned in 1861 was 111, and only 38 in 1871,—numbers which are probably very imperfect, as many owners of quarries are not returned as such, having other occupations of greater importance. The stone merchants and agents, together with stone dressers and cutters, increased from 4,712 in 1861 (33 being women) to 6,072 (23 being women) in 1871. This increase of more than 25 per cent. in the stone-cutters, and that amongst the quarriers of 16 per cent., seem to point to the fact of a considerable increase in the use of stone in building and paving during the past ten years. The slate quarriers increased from 9,360 in 1861 to 9,814 in 1871,—a very moderate addition in the ten years. The slate merchants, manufacturers, and dealers, on the other hand, advanced in number from 401 in 1861 to 1,185 in 1871. There has been a total increase in the workers and dealers of this class of about 6,000,—from 36,722 to 42,790,—in the ten years.

In 1861 there were 59 persons, in 1871 only 29 persons, returned as clay merchants. The number of clay labourers in the former year was 2,812 (247 of them women); in the latter year they had decreased to 2,522, of whom 133 only were women. The brickmakers likewise decreased from 39,620 in 1861 (1,852 of them females) to 38,779 in 1871, of whom 2,530 were women. There has thus been a total decrease in the class of clay labourers and merchants, and brickmakers, of 1,161 in the ten years. In that period, however, the number of bricks manufactured has enormously increased. The two facts are sufficiently explained by the extensive adoption of brickmaking machines in recent years. It will not escape notice that there has been a not inconsiderable increase in the number of female brickmakers since 1861.

Limestone quarriers, lime burners and dealers, have diminished in number from 6,006 (98 of them women) in 1861 to 5,281 (87 of them women) in 1871. Plaster and cement dealers, on the other hand, have increased from 1,083 at the former date to 2,053 at the latter; the women in the trade numbering respectively 14 and 12. Chalk workers and dealers have also increased from 392 to 435 in the ten years. Sand and gravel dealers have likewise increased from 158 to 553 in the same period. In this class of building materials, the numbers employed have increased from 7,639 to 8,322 in the ten years.

Railway contractors have diminished in number from 549 in 1861 to 251 in 1871. In the same period navvies or excavators, platelayers, and railway labourers have increased from 43,012 to 45,070. Passing from the iron roads to the common highways, we find that road contractors, inspectors, and surveyors have gone up from 1,022 at the earlier date to 1,447 at the latter. Labourers, who returned themselves as working on roads, on the other hand, decreased from 9,502 to 8,302; but as a vast number of labourers did not sufficiently distinguish the special branch of labour they followed, little value can be attached to this apparent decrease. Scavengers, and dust-collectors and sifters numbered 1,769 in 1861, and 2,245 in 1871. There were 77 women in 1861 and 71 in 1871 among the dust-sifters. There were 333 men in 1861, and 373 in 1871, employed in connexion with the sewers and drains of towns. Connected with the drainage of the land for agricultural purposes, there were 1,761 men in 1861 and 1,255 in 1871. The waterworks service employed 1,507 persons at the earlier date, and 2,555 at the latter. The well-sinkers number 523 in 1861 and 596 in 1871. Locksmiths and bellhangers increased from 5,528 to 7,326, and gasfitters and gasfitting manufacturers, from 6,122 to 9,317 between the two dates. In the miscellaneous occupations just given the aggregate numbers of persons employed have risen from 71,628 to 78,737 in the ten years.

Finally, we have another miscellaneous list of occupations which are all more or less engaged in supplying builders with their materials or tools, or otherwise employed in producing articles required in the fitting-up, finishing, or furnishing of houses. What they are, and what changes they have undergone between 1861 and 1871, we will now tell in the briefest possible manner.

Nailmakers have decreased in number from 26,130 (10,761 of whom were women), to 23,231 (of whom 10,864 were women); screw-cutters, from 2,683 to 2,119 (the women having decreased from 1,546 to 1,479); and hinge-makers, from 772 to 713. Ironmongers and hardwaremen have, on the other hand, gone up from 10,780 to 17,368; tool-makers, from 6,310 to 7,627; and cutlers, from 5,912 to 17,903. Saw-makers, from 1,960, have decreased to 1,958; and glaziers' diamond-makers, from 12 to 6. Altogether, there has been an aggregate increase in this miscellaneous class from 54,559 in 1861, to 70,925 in 1871.

Taking the whole of these subsidiary classes together, we find that the number of persons employed in them was not quite 275,000 in 1861, and that they had increased to upwards of 300,000 in 1871, and that, too, notwithstanding that in some of the most important of them improved machinery and steam power have been extensively adopted, thereby effecting a more or less considerable economy in the mere manual labour required.

It will not, perhaps, be uninteresting to our readers, if we here append a few words and figures, showing the changes that have taken place in the number of persons employed in the building trades in London itself. The carpenters and joiners of the metropolis were 27,598 in number in 1861. They had increased to 31,742 in 1871,—an addition of upwards of 4,000 in the ten years. The bricklayers rose in the same time from 16,535 to 17,983, having added 1,448 to their number in the interval. The plumbers and glaziers increased from 20,441 to 27,817, showing an increase of no fewer than 7,374 in the last ten years. The masons and paviors increased in the same period from 4,588 to 6,629; the plasterers from 5,206 to 6,167; the paperhangers from 1,061 to 1,497; the marble masons from 636 to 853; and the slaters and tilers from 476 to 603. The master builders increased in the period in question from 3,845 to 5,700,—an increase of nearly 50 per cent. in their numbers in the ten years. The surveyors rose in number from 749 to 971; while the architects, who numbered 1,459 in 1861, had increased to 1,928 by 1871. In the former year there were 837 persons, and in the latter 1,138 persons following a variety of minor occupations included in the building trades. The number of women in these trades was only 305, of whom 43 were carpenters and joiners, 43 builders, 98 plumbers and glaziers, 86 blind-makers, and 35 miscellaneous.

These women were, doubtless, nearly all proprietors of businesses. Altogether, the building trades of the metropolis employ, therefore, 103,844 persons, of whom 103,539 are males and 305 females. Such, then, is a brief review of the numerical strength of the building trades, and the occupations connected therewith, as they may be said to stand in this country and in the metropolis at the present time, and as they stood ten years ago.

EXHIBITION OF WORKS IN BLACK AND WHITE.

THE interest of the exhibition of works from which colour is excluded is kept up this year, and fully justifies the recent establishment of this type of picture exhibition. The value of a collection of this kind consists partly in affording an opportunity for studying the free thoughts of eminent artists in their original form, partly in the opening which it gives for the exhibition of drawings displaying genuine artistic feeling and power by those who have not had time to carry out the more elaborate forms of art execution in oil and water-colour. Sketches like many of those here would scarcely be noticed if exhibited at a large picture exhibition, where every one is taken up chiefly with works of a more ambitious class. Here they are accepted and criticised on their own footing, and assert their real value; and it is instructive also to see how much of the intellectual interest of art may be present in works executed in such simple materials and on so small a scale as most of these.

Among the forms of colourless art, that of etching claims the pre-eminent place for the strong individuality of tone and style attainable by this method, and the mechanical and æsthetic problems which it presents to the artist, who must not only have mastered the manipulation of his art, but must know very thoroughly what can and what cannot be achieved in it. No form of drawing gives better than this what may be called the metaphysical beauty of scenery—the tone and feeling apart from the details; indeed, in respect to landscape subjects, it may almost be said of etching that the less it attempts the more it gives. Among works here which illustrate the real power of this art in landscape are Slocombe's "Margate Cliffs and Jetty" (167); Bradley's "Canal la Vena, Chioggia" (240); and "On the Marshes, Pisa" (361), the latter a most masterly study; and Vaillant's little studies "In and About Boulogne" (224), showing how much of poetry this art can impart to the simplest combinations of common objects or scenes. "Le Soir au Village," by Roc-Bhian (229), is an example of the opposite style of laboured and finished etching, and a very good one it is, but then by loading the plate in this way much of the characteristic tone and effect of etching is lost, and the thing comes to resemble an engraving too much. In the treatment of figure subjects and heads etching can be carried with success to a much higher elaboration; it affords facilities for representing the texture and lights of dress and accessories (perhaps we should rather say "capabilities," for "facility" is no part of this style of etching), without bringing them into too full and prosaic a realism. Of such successes in the art there are here several examples in impressions from the unequalled work of Jules Jacquemart, in whose country the art has received such great encouragement, and been consequently carried much further than elsewhere. The reproductions by this artist of Reynolds's "Mrs. Seaforth and Child," and Carl de Moor's "Bourgmestre de Leyde" and "Elizabeth de Valois" are admirable; also, in a slighter manner, his "Sir Richard Wallace," after Baudry, originally done (as, we believe, were the others) for the *Gazette des Beaux Arts*. Rajon's "Portrait of an Old Woman," after Rembrandt (225), also made for the same publication, is a splendid specimen from a painter whose works form peculiarly good subjects for etching, owing to their broad and powerful *chiaroscuro* treatment. E. Edwards's etchings of old inns are topographically interesting, a little too merely realistic as drawings; the "Lavatory Cloisters, Gloucester," by the same hand (133) is a much better specimen of the true power of etching. Bracquemand's "dry-point" (*i. e.* drawn with the needle direct on the copper without acid) of "The Locomotive, after Turner" (37) is an exceedingly clever attempt at a subject scarcely suited to the material; his "Souvenirs du Siége, 1871," has interest. A "dry-point" by Dr. Evershed, "Still Life" (321), shows great neatness of execution; the plate and a proof are exhibited in one frame.

In the style of execution most allied to etching, viz., pen-drawing, we have several of the originals of M. du Maurier's capital illustrations to *Punch*; the ladies' "school of art" among others. In the "flower of fashion" (54) may be noticed the admirable indication of the texture of dress, in the lady's jacket especially; similar excellence is to be remarked in "Early Grammar" (176). Mr. Brewer sends an elaborate pen-drawing of "Old London Bridge and Southwark Mills" (387), an excellent specimen of architectural drawing of this type. In her two spirited studies of cavalry from Woolwich and Aldershott, "Gallop" and "Halt!" (190, 233), Miss Thompson proves to demonstration that she can draw horses in action right well, in spite of the doubtful bind-leg at the Royal Academy. Fantin's two lithographs "À la Mémoire de Robert Schumann" and "Manfred" (135, 203), deserve attention as instances of a peculiar and in its way very effective method of execution entirely by cross-hatched lines; there is a certain power and fancy in the designs, though they are not of the first order, but the method of execution has the merit of having a language and a feeling peculiar to itself, and not to be confounded with anything else. Charcoal is another method considerably illustrated here, especially by the drawings of M. Léon Lhermitte: and nothing could be more characteristic of French artistic habitudes than his fine sketch of "Gleaners," with the figures stooping on the dark field against the evening light, roughly drawn on a piece of paper with uncut edges, mounted equally roughly on blue paper, and surrounded by a frame like that of a school slate. The subject is everything, and the setting nothing. There are others of great merit by the same artist. A good charcoal is that by Mr. R. Townroe (399), "Over-worn," a single figure of considerable pathos, and which is to some extent a set-off against the same contributor's very unhappy "Original Drawing of the Certificate for the Whitworth Scholarship."

Among figure-subjects are the original studies for the two principal figures in Mr. Marks's picture, "Capital" and "Labour" (160, 185), in crayon, on toned paper; these are highly-finished studies: the old gentleman who represents Capital had not at this stage bethought himself of his gold chain, however, and his hand rests by his side. A small study by G. F. Watts in red crayon, "Sleeper awakened" (241), with the motto, "The people that walked in darkness have seen a great light," is beautiful in feeling and composition. Compare the artistic value and interest of this little study with that of a certain *very* large sacred subject, in the Academy at present; we could not have a better instance how little the intellectual value of a work is dependent on its size or finish. A very delicate little pencil study by Mr. Watts (271) shows a figure of a lady with her hands clasped before her in a thoughtful attitude, very charming and suggestive.

Mr. Powell, whose reputation as a sea-painter may be said to be now established, sends a very fine large study of sea, under the title "The Isles of Fingal" (79); the island is seen half shrouded in mist and rain, the heavy swing of the deep water is very finely given. Mr. Raven's large study, which occupies the corresponding place on the opposite wall, "Upper Valley of the Conway" (255), has, to our thinking, a little too much of the appearance of a magnified book illustration; there is rather more of picture-making than of real art feeling in it. It is to be hoped this artist, whose very beautiful landscapes in one or two recent Academy exhibitions showed him to be capable of more than mere painting of "effects," will not desert his former and better line of work.

Among other things that should be looked at are Leighton's "Rubinella, Capri," a figure study (90); Wolfe's admirable drawing of monkeys in the middle of their gambols (102); a very fine charcoal drawing by the late G. Cattermole, "Kenilworth" (153); "Twilight," by Clough Bromley; a study of the foliage and growth of "Lemon Tree, Capri" (171), by Leighton; "Evensong" (191), an original design for the *Illustrated News*, by S. Read; "Homeward" (196), a sepia drawing by H. Goodwin; "La Pipe de Tabac" (243), charcoal, by Regamey; two pen-drawings of scenes "À Nantua" (260) by A. Appian; "Spring Inundation, Canada," by F. A. Hopkins (354); Captain Wyndham's works; and others of more or less interest and merit.

BOOK-COVERS.

AMONG modern "revivals," that of bookbinding has its place, as one of those subsidiary movements in ornamental art which have accompanied, or perhaps arisen from, the revival of the central ornamental art of architecture. The state of the bookbinder's art in the eighteenth and nineteenth centuries respectively, has, in fact, no little affinity with the condition of architecture in England during those two cycles. The plain strong marbled backs of the durable volumes of the last century must have suited the taste of the people, who thought nothing so good to live in as the solid square brick house, *simplex munditiis*, of which we see types at Chelsea and other of the older suburbs of London; and the architectural activity of the present day, in its fifty different forms and styles, finds its type represented in the varieties and vagaries, some of them picturesque enough, of the ornamental book-covers of the day. These, as well as the older styles of Mediæval binding, are pretty fully represented in the International Exhibition, where they form, not inappropriately, a kind of connecting link between "lace" and "leather."

The development of bookbinding to any great extent of course dates from the invention of printing, and the consequent multiplication of books; but we find some of the most characteristic forms of earlier bookbinding already illustrated, and in an elaborate form, in copies of some of the mere manuscript books of the præ-Caxton era. Of these are some of the large and reverend-looking volumes, lent by the Dean and Chapter of Durham, in the Exhibition (No. 6,578), bearing their old-world titles on the back in what Dr. Cumming would call "the customary ecclesiastical Latin." These exhibit mostly designs of small stamped or incised ornaments on leather, covering the whole surface of the back, and geometrically arranged in parallelograms or other regular figures. These are mostly "blind-tooled," i.e., simply stamped without gilding; a form of decoration very lasting and very suitable, but somewhat dull in effect, and requiring pretty close examination to follow out the design. Indeed, an old writer on the subject enters a protest against the exclusive use of blind-tooling, which "converts what should look like a *book* into a piece of "mahogany furniture." This will depend partly on what we happen to think a "book" should look like; but there are specimens in this case quite deserving attention as suggestions in design; a "Budæus," for instance, with the main design in the form of an Oxford cross-frame, the centre space filled in with vertical strips of differing arabesque patterns; and a glossary of the Psalms, "Liber Hugonis Episcopi," covered with little medallions containing animals or geometrical figures. The Ecclesiastical Institution of Durham, it may be observed, has an hereditary reputation in regard to the care and ornamentation of the books in the Cathedral Library; Bishop Cosin, who held the See towards the end of the seventeenth century, would seem to have put much of his heart into his bookbinding, and his minute correspondence on the subject of the covering of his books is somewhat edifying, as also the receipt from a goldsmith for 100*l.* in part payment for the covers of a Bible and a Prayer-book for this episcopal virtuoso. As early as the sixteenth century, however, it was customary to make a valuable book the vehicle of much more elaborate artistic work than the old tooling and gilding could supply, one means of glorification of the volume being the insertion of cameo heads in relief in the binding. Thus the outside of the book became in itself a valuable work, and required massive angle studs for it to rest upon when laid on its side; and it may have been in consequence of the value of the binding as well as the book, in some cases, that the system of chaining them to the shelves in libraries was at one time so general.*

Some of the old bindings exhibited here are, however, of no little interest artistically, without displaying any of the more sumptuous resources of the art. The collection of French and Italian bindings lent by Earl Spencer (6,612), mostly of the sixteenth and seventeenth centuries, contains a good many of those intricate devices of interlacing ribbon patterns (mostly perfectly symmetrical) which occur so frequently in bindings of this period,

* In Sir Thomas Bodley's papers mention is made of the "chainman" as a well-known and recognised tradesman, whose bills also seem to have been pretty long.

and are so exceedingly well suited to the material and the object in view. A very artistic little Petrarch (Venice, 1581), and a fine binding of a forgotten work, *De gentium migrationibus*, may be specially noticed: the latter is a noble design, consisting of a predominant pattern in broad black bands filled over with a secondary one in thin gilt lines. The loan collection of Mr. Turner (6,620) contains some fine specimens in a similar manner; *l'art militaire*, a black arabesque on a spotted gold ground, is very characteristic; and there is great ingenuity in the small *Oronte*, decorated with strap-work of different colours interlacing, and connected at the angles by half-moons. This, and others here, illustrate the art of conveying a special character in the binding of a book, in keeping with its nature or subject, without employing any definite imitation of known objects. This is the best style of artistic book-cover, and gives great scope for the thought and fancy of the ornamentist. One celebrated collector of books, a generation or two back, is recorded to have had a simpler and more direct system of external expression for the backs of his books; he had certain recognised bindings for books of different classes: works supposed to deal with science or wisdom generally would be decorated with owls; a history of struggles or wars of a nation would be decked with devices of swords and helmets; and so on. This, however, was a whimsical rather than a fanciful idea; but it is one which, as we may observe just now, has been a good deal carried out in recent bookbinding. To return to the ancient specimens, however. Passing over the case of books lent by the Archbishop of Canterbury, Mr. Dyer Edwardes, and others, which exhibit very similar characteristics with the Durham contributions, we find under No. 6,563 the crimson velvet-covered "King Charles" Bible, embroidered in the silver thread, which must have presented a most brilliant appearance when new, and even now retains a rich, though tarnished, lustre. There is more work than design in this, however. One or two specimens in the same case, lent by the Earl of Orford, furnish examples of that white parchment covering with gilt ornament, which seems the very binding for such works as the "Faërie Queene," or Sidney's "Arcadia," with their old-world elegance and freshness of fancy. The large Bible, in Case 6,590, is a beautiful specimen of stamped and gilt design; the main portion of the pattern consisting of delicate flower-sprays differing in detail, but symmetrically arranged in panels divided by thin doubled gilt lines. Mr. E. A. Bowring lends a German Hymnbook, with metal mount, designed by the late Prince Consort. In the same case two or three specimens of horn-bound books, with silver mounts, illustrate one of the old fashions of bindings long since disused.

One of the important distinctions between the old and modern manner of binding arises from the introduction in the middle of the last century of the "sawn back"; the bands on which the book is sewn being let into the backs of the leaves, which are "sawn" into grooves for the purpose of sinking the bands. The result of this is the flush back, instead of the old ridged back described by Crabbe in "The Library":—

> "On the broad back the stubborn ridges roll'd,
> Where yet the title stands in tarnish'd gold."

The modern system gives no doubt, in one sense, a neater finish, but looks, and probably is, much less strong and durable than the old method, which had the merit, too, of emphasising the construction of the book in an effective manner. But it is with books as with buildings—the new ones are evidently not meant, and not constructed, to last as long as the old ones. A case of account-books by Mr. Moore, of Manchester (6,599), shows, however, some of the durable look of old binding, and some of the work is excellent in the plain but effective design suitable to the practical objects of the books. The cases of bindings by Pollitzer (Austria) against the end wall of the room, deserve attention for fine workmanship, considerable individuality of style and design, and an effect of richness without tawdriness. The majority of the modern work is arranged in the cases on the east side of the room. At the top (north) end we find Messrs. Burn & Co. represented by a numerous collection of sufficiently various character, of good workmanship, but illustrating more than one of the forms of false taste in modern book-covers. Last century was specially the epoch of plain and homely durability in bookbinding: the brown marbled back was almost the *sine quâ non* in England, and so prevalent was the taste in favour of this kind of Quaker's binding, that it was thought worth while to go out of the way to send books to be "marbled" by the inventors of the process, who had *nous* enough to keep their method to themselves for some time. Now we are at the opposite extreme, and a flimsy kind of richness is constantly met with, accompanied by a too manifest poverty and feebleness of construction, in what may be called "drawing-room table-books," generally found in houses where no one reads very much. Then there is the illustrative cover, where the contents of the book are advertised, just as they advertise the contents of a travelling show, by pictures outside of what is to be seen inside. Thus a book on English landscapes has a landscape framed on the back; a work on the spectrum analysis is decorated by a delineation of a prism across the back, with the sun and the earth at opposite sides of it, and a treatise on "sound and music" has two hands on the back, holding tuning-forks in different positions. Of all this it can only be said, in two words, that it is vulgar and inappropriate; but we suspect it is a style of binding encouraged by publishers, because it serves to pique curiosity and call attention to the book. Then there is the romantic style of binding,—we might, perhaps, call it the artist's style,—in which a piquant irregularity and freedom of treatment is aimed at: among works of the kind by this firm is the now well-known binding of Rossetti's poems, designed probably by the author. A rather pretty one is "Love is Enough," in which the title is entwined in one band of gilt-leaf sprays running across near the top of the book, on a perfectly plain green ground. There is distinctive character in this, and in the gilt decoration on grey ground of "My Lady's Boudoir," in the "Collects of the Church of England" (white, with a band of green leaves and white flowers on a black ground), and in the binding of the "Story of Volsungs and Niblungs," covered with a delicate gilt scroll ornament with circular flowers interspersed. The work in case 6,555, by Mr. Bell, is in very commonplace character, the only good thing in it being a very pretty and fanciful design for Jebb's "Translations" from Greek poets. The case by Bemrose & Sons (6,556) contains some very good work of a peculiar type, some of the backs being made purposely to exhibit different processes treated of in the work they cover: a work on fret-cutting and perforated carving thus illustrates itself, the design consisting of a perforated pattern, is in black wood with a gold ground showing through. This is a very different kind of thing from working pictures on the back to represent the subjects treated of; it is in perfectly good taste, but of course in too expensive a style of binding to be much used. A presentation prayer-book, with a carved wood panel (flat conventional foliage); Macaulay's "Lays," with a thin, black green-leaf pattern on a chocolate ground; a little prayer-book, with inlaid ivory and ebony back, are among other good pieces of work in this case. Under No. 6,591*b* we come to some admirable and most characteristic work by A. Lachnich (Olmütz, Austria). This consists of some large backs of leather mosaic, inlaid in various colours in lines and spaces of geometrical design and slight but appropriate enrichment: in execution and design this is first-class work of a sober and practical style, which, in its way, deserves very high commendation. On the opposite side of the same case, under No. 6,614, is some very good binding by H. Stevens, in imitation or restoration of antique work; among others a cloth binding of interlaced whitish and reddish bands on a brown mahogany-coloured ground is excellent, and quite in the spirit of the best old work of the kind. Courtier & Son's ecclesiastical bindings (6,569) are pretty, but show little feeling or sense of the picturesque. The next case (6,623) contains excellent work by J. Zaehnsdorf, who, though he sometimes binds our own volumes very indifferently, at the same time produces work which has justly given him a wide reputation. The principal specimens exhibited by him here consist of large intersecting strap and scroll patterns of admirable design both in regard to flow of line and colour effect; one in particular, a design in light and dark red on a dark green ground, the interspaces filled in with small incised and gilt foliage, is as fine a specimen of work of this kind as one could wish to see. A small Voltaire, a gilt design on red ground, is also specially good. The practical process of bookbinding was, at the time of our visit, in course of illustration by some of Mr. Zaehnsdorf's staff, for the further edification of the public. A case of old bindings next to this, including a fine large copy of Dante, should be noticed. The work of Messrs. Judd & Co. (6,591*a*) is rich in effect but presents nothing that is striking or original in design; the work of the "Arbeiter Colonie," of Marburg, in an adjoining case, is, on the contrary, rather too eccentric in type, and seems designed to illustrate the curiosities of bookbinding. The "Stained Leather Work for Bookbinding," by C. Tuckett, of the British Museum (6,618), shows a very good class of work indeed, mostly in a style of conventional foliage; a large book for engravings, with an acanthus design in greenish and gold on a black ground, is very fine and flowing in line. Messrs. Birdsall & Son, of Northampton (6,557), contribute some very admirable work, and have very well succeeded in producing characteristic decoration, as in the binding of "Le Temple de Jerusalem" and of Dante's "Vision of Hell;" the latter is particularly good and effective. The last two cases (6,554) are filled by F. Bedford & Son, who show much excellent and very suitable design, especially in their bindings of some small octavo editions of the poets, with gilt diapers of very good design. Messrs. Straker & Son's work at the south end of the room, consisting to a great extent of children's books, is rather sensational than artistic in style.

Modern bookbinding, as represented here and elsewhere, seems in the main to aim too much at mere prettiness and show, and to place good and durable workmanship at less account than it should be. The books which cover the drawing-room table, in nine houses out of ten, seem to depend for their effect more on a kind of costly-looking incrustation of gilding and ornament than on careful workmanship or thoughtful and fanciful design. Less ornament, and better of its class, is what is needed; and there is a great lack of really original motive and fancy in book-cover designs. Even the comparatively moderate amount of work in the International which shows artistic fancy and feeling is very much more in proportion than we commonly meet with, and the best style of things we have mentioned are quite exceptional among ordinary collections of books. There is a large field open for ornamental design in book-covers, without necessarily rendering them very costly; and the books themselves, in most cases, would supply hints and ideas for the designer to work upon. This, however, should be done in a purely ornamental type of work, and not by making pictures on the back of a book, which is quite a misapplication of design.

THE INSTITUTE SOIRÉE.

THE annual *conversazione* of the Royal Institute of Architects was held at the rooms in Conduit-street, on Wednesday, the 8th inst. There was a large attendance; and, as the warmest day, perhaps, of the season happened to fall on that date, the visitors had an opportunity of appreciating the arrangements for ventilation in the building which forms the head-quarters of the architectural profession in England. The guests were received by the President, Sir Gilbert Scott. Among the works of art exhibited were some fine sea studies, by H. Moore, and some very original and suggestive small studies of landscapes, by Mr. A. B. Donaldson,—one in particular, a view of Oxford, showing very high artistic qualities. A case of snuff-boxes, contributed by Mr. Harry Oliver, attracted attention, and exhibited a curious variety of delicate and fanciful design bestowed on this not very romantic class of subject. The School of Art-Needlework sent good specimens of appliqué work, chiefly in floral and spray designs of considerable elegance, though in artistic power far below the Japanese silk-paintings, as they may be called, of fish and marine plants, &c., mostly lent by Mr. R. P. Spiers. Perhaps these latter are not the most suitable as decorative designs, but the mastery of perspective exhibited in them is notable. A chimney-piece, from the design of Mr. Tarver, was a central object in the large room, with the "Judgment of Paris" portrayed as a frieze of child-figures in a humorous and clever manner. Among the curiosities of the evening was also a frame of Silhouette figure-designs, illustrations of fables, cut out in white paper and relieved against a black ground; these were understood to be the work of a sister of one of the fellows of the Institute, and showed in their way a facility of no ordinary kind. A

fine oil study by David Cox, modern Venetian glass by Salviati, and numerous architectural drawings and sketches by various members of the Institute, were among the things which offered agreeable matter for interest or study.

The band of the Coldstream Guards was in attendance in the lower rooms, and played with their usual excellence during the evening; but the result would have been better had the band been accommodated, as on previous occasions, in a gallery at the end of the room, and not in the centre of the floor and close to the auditors. There is room for improvement in the musical bill of fare on these occasions. A programme entirely of the lightest music, in which such titles as "Weib, Wein, und Gesang—Walz" (Strauss), "La Vie Parisienne" (Offenbach), Galop, "Neck and Neck" (Godfrey), form items, would lead to the supposition that the musical tastes of the architects generally were of a very superficial, not to say dissipated description, which is scarcely the case. There is no reason why music should not be as well illustrated as the other arts on these occasions; it might, at least, be free from vulgarity and commonplace.

PARLIAMENT STREET.

ON Monday last Mr. Goldsmid put a question to the First Commissioner of Works as to the intention of the Government in regard to the removal of the remaining block of houses in Parliament-street, and the reply given by Lord Henry Lennox was to the effect, that such removal would depend on the decision which the Government should come to as respected a new War Office and other offices for the public service. His lordship seemed to ignore altogether the fact that the public had long clamoured for the removal of these houses, in order to complete the grand street of Whitehall, as far as the Abbey. The fact is, that about one-third of these houses are Government property, and occupied by tenants at will. The sum that is therefore needed for the improvement is not so considerable as should deter the Government from carrying out so great an improvement to the approaches to the Houses of Parliament. The Metropolitan Board has the power to borrow money for like improvements, and to spread the cost over fifty years; and it is not unreasonable that the Government should obtain a similar power if desired.

THE UNIVERSAL ALLIANCE.

"THE object of the Universal Alliance is to promote International Works of Humanity by means of diplomatic action." It seeks by various means to attain the one object and aim for which it exists—"Humanity"—in all social relations and in all circumstances. Various societies have been established in England and other countries, with special humane objects in view, such as the prevention of cruelty to animals, the protection of poor women and young children, and generally for the suppression of various forms of brutality exercised by the strong over the weak. It will be seen on reflection that the special laws which have been framed with these objects in view should be of universal application, and in many instances they are of such a nature that they can only be effective in any one country by being enforced in all countries alike. The Alliance has therefore created this International Committee with the view of promoting such measures as may tend to harmonise and enlarge the scope of the human laws of all countries. The action of this committee will extend to whatever may be classed under the head of cruelty or inhumanity, whether towards animals or to our weaker fellow creatures.

Amongst its departments is an International Sanitary Committee. This Committee interests itself in all international sanitary questions, whether originated by itself or by societies or individuals, with a view to their solution by diplomatic action. The praiseworthy initiative taken by the Emperor of Austria, with a view to checking the spread of cholera in Europe, is an instance of the latter kind, in which the co-operation of this Committee will bring the force of public opinion to bear on a question of the highest general interest. It has been decided that the International Cholera Conference which has been convoked to discuss the means of preventing the spread of cholera, will meet in Vienna on the 1st of July, 1874. All the Powers have accepted the invitation to send representatives, who will discuss the terms of an international treaty respecting measures of quarantine upon an outbreak of cholera, and the nomination of an International Commission to be appointed to study the causes of the disease.

The various branches of the Universal Alliance in Europe and America have agreed that the International Congress shall meet on the 1st of June, 1875, in London. In the meantime an International Congress is to be held at Brussels on the 15th of July, to discuss the rights and duties of belligerents in time of war. Such of our readers as say "I am a man; and anything that concerns man concerns me," will do well to call at No. 41, Pall Mall, and learn something more about the Universal Alliance.

CHESTERFIELD PUBLIC HALL COMPETITION.

MR. T. C. HINE, having been instructed to report on the twenty-seven designs submitted, says at the close of his report,—

"There are so few designs marked by a rigid adherence to the printed conditions, that in the selection of the merely premiated designs I am compelled to overlook some departures from the same, but taking as comprehensive a view as my three days' study of them has enabled me to do, my recommendation is that after 'Hope' they be placed in the following order of merit:—

No. 1. 'Hope.'—Messrs. Smith & Woodhouse, Manchester.

No. 2. Maltese Cross.—Messrs. Rollinson & Masters, Chesterfield.

No. 3. 'Lux.'—Mr. J. C. Gilbert, Nottingham.

No. 4. 'Carbon' (alternative design).—Mr. H. J. Paull, Manchester.

No. 5. Interlaced Triangle with Letter E.—Mr. J. B. Everard, Leicester.

For the reasons before stated, I do not flatter myself that the design which I have placed first on the list is one which will meet with general acceptance; but so far as you deem it right to abide by your instructions, you need not hesitate to confirm my selection."

EAST ARDSLEY SCHOOL BOARD COMPETITION.

COMPETITIVE plans were recently invited from architects for the new schools to be erected by this Board. In response, thirteen sets of drawings were submitted, with the result that the first premium has been awarded to Messrs. Holtom & Connon, of Dewsbury.

LAMPETER WORKHOUSE COMPETITION.

THE Board of Guardians of the parish of Lampeter, in Cardiganshire, having been required by the Local Government Board to erect a workhouse, invited four architects to submit designs for it. After duly considering the plans, in conjunction with the Government inspector, they selected those submitted by Messrs. Szlumper & Aldwinckle, of London and Aberystwyth.

PROGRESS IN HARROW.

IN 1871 a fund was raised, called the "Lyon Memorial Fund," for the purpose of acquiring land and erecting buildings for school purposes at Harrow. The objects contemplated were,—1. A speech-room, which could also be used as a concert-room. 2. The purchase of land to check building beyond the control of the school; and, 3, other buildings, connected with different branches of education, including schoolrooms, a museum, a laboratory, a room for drawing, a gymnasium, and lecture-rooms for the study of natural science. A subscription was immediately set on foot. The money promised up to the present time amounts, including interest, to nearly 28,000l., of which sum no less than 6,000l. has been expended in the purchase of sites for the speech-room and for the laboratories, including a house in the near vicinity of the former.

Of these buildings, the gymnasium, erected on a site granted by the Governors, from designs by Mr. C. F. Hayward, is now completed and in full working order. Its cost will be about 3,500l. The laboratories, built also from designs by Mr. Hayward, have been in course of construction since December last, and are proceeding rapidly. Their cost will be hardly less than 6,000l., exclusive of the cost of site.

The new speech-room, of which the first stone was laid on the 2nd inst., will be built from a design by Mr. W. Burges. It is estimated that this building, exclusive of nearly 4,000l. paid for the site, will cost in all 14,000l., but this does not include the upper part of the higher tower, the cost of which is estimated at 1,500l.

A further sum of 7,000l. is desired during the next three years, to relieve the committee from all anxiety, and complete the work, including new terraces in the lower garden, in a manner worthy of the name of the school and of the tercentenary commemoration.

MANCHESTER SOCIETY OF ARCHITECTS.

THE annual meeting of this society was held at the Royal Institution on Monday, June 22nd. The report of the retiring council was read, referring to the work done by the Society during the past session, the more prominent matters being the efforts made to promote the education of architectural students and the technical education of the workmen of the building trades; and the endeavours that are being made to induce the City Council to adopt such building regulations as would have the effect of a Building Act. The thanks of the Society were tendered to the president, council, and the honorary secretary for their services during the past year. The following gentlemen were elected officers for the ensuing session:—President, Mr. J. Murgatroyd (re-elected); Vice-president, Mr. Isaac Holden; Honorary Secretary, Mr. John Holden; Council, Messrs. A. W. Mills, G. T. Redmayne, Wm. A. Royle, Edward Salomons, and J. M. Taylor.

LAYING THE BOUNDARY-STONE OF THE LAMBETH CEMETERY EXTENSION.

A SHORT time ago the Lambeth Burial Board purchased a quantity of land adjoining their cemetery at Tooting, and last week the boundary-stone, showing the original area together with that of the extension, was laid by Mr. Robert Taylor, chairman of the Board, in the presence of several of the members, and Mr. Hugh Macintosh, the surveyor. The original ground, consisting of thirty acres, purchased in 1853, and the recent purchase in May last, of ten acres, make together forty acres. The amount of the contract is 1,965l. for completing the boundary by the erection of wall and railing. Mr. Joseph Stone and Mr. John Tyerman are the contractors, and the work is to be completed within four months. Mr. Taylor, the chairman, in laying the stone, said it was twenty years since he became acquainted with the Lambeth Burial Board, as one of its members, and he little thought there would have been any occasion to extend the area of the cemetery, as they were now about to do. He had no doubt that the addition would be sufficient for the next thirty years to come.

SCHOOL-BOARD SCHOOLS.

London.—Mr. Currie brought up a report of the works committee which was received:—The committee had invited tenders for the erection of a school to provide accommodation for 767 children on the site in Blackheath-road, Deptford. The following are the respective amounts:—

Scrivener & White	£8,200	0	0
Boyce	8,056	0	0
Niblett & Son	7,930	0	0
Cooper	7,800	0	0
Hill, Higgs, & Hill	7,820	0	0
Aitchinson & Walker	7,655	0	0
Jerrard	7,283	0	0

The committee recommended the acceptance of the lowest tender, that of Mr. S. J. Jerrard, of Homesdale, Lewisham, amounting to 7,283l. (Cost of site, 2,567l. 16s. Cost of building, per head, 9l. 9s. 10d.) The committee had also invited tenders for the erection of a school to provide accommodation for 804 children, on the site in Orchard-street, Hackney, the amounts of which we have already given. The committee recommended the acceptance of the lowest tender, that of Messrs. J. Perry & Co., of Tredegar Works, Bow, E., amounting to 7,650l. An endeavour was made to build the school without disturbing the existing infant school. The scheme was abandoned as being mistaken economy. The present tender, therefore, includes two sets of quantity surveyor's fees; a caretaker's house of three rooms and a scullery, three teachers' rooms, covered playgrounds, and covered ways. An additional source of expense arises from the fact that the building is done in two sections. (Cost of building per head, 7l. 0s. 6d.) Tenders had also been invited for the erection of boys' and girls' depart-

ments for the William-street, Hammersmith, school, providing accommodation for 301 children. Their amounts were :—

Niblett & Son	£3,995	0	0
Shepherd	3,950	0	0
J. & S. Williams	3,800	0	0
Aitchinson & Walker	3,795	0	0
Hobson	3,784	0	0
Scrivener & White	3,609	0	0
Hook & Oldrey	3,350	0	0

The committee recommended the acceptance of the lowest tender, that of Messrs. Hook & Oldrey, of 113, Southam-street, Westbourne Park, amounting to 3,859*l.* (Cost of building per head, 11*l.* 3*s.* 2*d.*) On the 29th of January, 1873, the Board accepted a tender amounting to 10,822*l.* for the erection of a school to provide accommodation for 1,665 children on the site in Turin-street, Bethnal-green. The site is surrounded by small houses, and will require boundary-walls to be erected on each side.

New Board Schools in Southwark.—The new schools erected by the School Board in Jamaica-level, Southwark, have been opened. The building is an adaptation of the Queen Anne style, and is designed by Mr. Robson, architect for the Board. It has accommodation for 1,100 pupils, and will cost 2,800*l.*

Leeds.—New schools are about to be built by the local School Board at Burley Lawn and Hunslet Carr. The land at Burley Lawn is situated at the junction of Cardigan-road and Burley-road, and is nearly an acre and a quarter in area. The land at Hunslet Carr is situated on the south side of Woodhouse-hill-road, and is an acre in area. The same design is to be carried out for both the schools, so that they will be exactly the same in plan, elevation, and general arrangements, and only vary slightly in the out-buildings and boundary-walls, which have been designed separately, so as to suit each site. The plans show that each school comprises three departments,—boys, girls, and infants,—and will accommodate 700 children, allowing 10 square feet to each child. The infants' school-room will occupy the centre portion of the building, and, like the boys' and girls' school-rooms, is 50 ft. long by 30 ft. in width. Each department has three class-rooms, opening direct into the main room, and fitted up with galleries and desks; also a separate entrance and lobby, fitted up with lavatories. The basement, which is covered with brick vaulting, contains heating-chamber, coal-place, and boiler-house, the latter having a sink and boiler. The principal rooms have open-timbered roofs, the height to the wall-plate being 18 ft. and to the ceiling-line 28 ft. 6 in. The roofs are covered with dark Westmoreland slates, with bright red ridging. Each school has two large covered playsheds, with out-offices opening out of them, one for the boys, the other for the girls and infants, and also has large open playgrounds to the front of the buildings. The materials used are brick, with hand-pressed brick facing, and bosted stone dressings; the walls internally will be plastered to within 4 ft. 6 in. of the floor, which space will be boarded with moulded skirting and capping. The schools are well lighted with windows, having splayed monials, transomes, and heads, the several openings being filled in with frames and sashes, the upper portion of the lights having hopper casements. The ventilation is by means of air-trunks carried along the ceiling, with openings into rooms, and having connexions at each end with flues, which run up alongside of smoke-flues. The doors have splayed jambs and pointed and splayed heads; they are framed and panelled, and hung double with patent brass floor spring hinges; fanlights are arranged above each doorway, with splayed monials, heads, and sills. The drawings have been prepared by Mr. Richard L. Adams, of the firm of Adams & Kelly, architect to the School Board. These schools at Burley Lawn and Hunslet Carr make thirteen that are either completed or are in progress.

THE WORKMEN'S CLUB IN PIMLICO.

SOME few years since, a working men's club, chiefly founded by the munificence of the late Marquis and present Duke of Westminster, was instituted in the Buckingham Palace-road, and entitled the Grosvenor Club. The club has proved a great success, so much so that to become a member is a difficult matter, particularly to *bond fide* working men.

It appears that the committee of the club are now on the eve of adding to their premises a hall, at the rear of the club, in Flask-lane, for concerts, balls, public meetings, lectures, and private theatricals, the first-floor of which is to be 90 ft. long by 32 ft. wide. On the ground-floor will be rooms for meetings, suppers, gymnastics, intellectual pursuits, and for classes. Part of these premises are to be let to building, benefit, and trade societies. The new building, it is estimated, will cost about 3,500*l.*, and the Duke of Westminster has promised another 1,000*l.* Towards the expense the trustees hold 400*l.*, and if the members subscribe about 500*l.*, the trustees of the Working Men's Club and Institute Union, 150, Strand, undertake to raise the remainder, so as to open the new place by Christmas.

SOCIAL SCIENCE CONGRESS.

THE following are the special questions appointed for discussion at the Glasgow Congress in the Health Department:—1. "What are the best methods of sewering towns, and of disposing of their organic refuse?" 2. "In what way can healthy houses of a corresponding class be substituted for those which it has been found necessary to remove for sanitary, municipal, or other purposes?" 3. "What influence has the employment of mothers in manufactures on infant mortality, and ought any and what restrictions to be placed on such employment?"

The questions in the Economy and Trade Department are:—1. "What are the probable effects of the spread of manufacturing industry in Europe on the future commercial prosperity of the United Kingdom?" 2. "What legislation should follow upon the report of the commission on friendly societies?" 3. "What are the best means of drawing together the interests of the United Kingdom, India, and the colonies?"

THE METROPOLITAN BUILDINGS BILL.

THE Committee of the House of Commons on this Bill was to have assembled on Tuesday last, but in order to prepare amendments in compliance with the decision of the committee a further adjournment was found necessary, and Thursday was fixed as the day when the committee would re-assemble. The printed amendments, however, have necessitated a still further adjournment, and the committee will meet to consider the amendments. The amendments which have been printed by the promoters of the Bill, in agreement with the decision of the committee, show that, as to the height of buildings and also in reference to the question of cubical contents, the committee have drawn up new clauses in accordance therewith. The limit as to the height of buildings in new streets above 50 ft. wide is abandoned, and in reference to cubical contents, buildings which are absolutely warehouses, and not manufacturing premises, are alone included within the provisions of the Bill.

In reference to the question of district surveyors, several new clauses have been introduced into the Bill, and many clauses defining the duties and position of the district surveyors are restored from the existing Act.

NEW REREDOS IN BERKHAMSTEAD CHURCH.

A REREDOS has just been erected in the parish church of Great Berkhamstead, in memory of the late rector. The design is by Mr. Burrow, and is exhibited at the Royal Academy, the subject being, "The Crucifixion," with the Virgin and St. John in the centre, and St. Peter (the saint of the church) and St. James on the side panels. The whole work is by Messrs. Powell, and executed in their mosaic. A corona also forms part of the memorial. Amongst the contributors were his Royal Highness the Duke of Cambridge, the Earl Brownlow, the Bishop of the diocese, the present rector, the Rev. J. W. Cobb, and many friends and parishioners, including many among the poor. This offering, and the large paintings of the Ascension, which were recently placed in the church by Mrs. Hutchinson, also in memory of her husband, form together a chief feature in the internal decorations of the church. We understand that further work is contemplated, the rector having given orders for the preparation of a design for the whole chancel; and a series of paintings of angels with musical instruments will, in all probability, soon adorn the spaces between the arches of the nave.

FOLKESTONE.

ON Thursday, the 25th of June, a new aisle, which has recently been added to the parish church, was opened for public worship. The aisle, which is erected as a memorial to the great Dr. Harvey, is designed in the style of the latter part of the fourteenth century, with moulded open timber roof, and rich tracery-headed windows, which at present are glazed only in the most temporary manner in anticipation of stained glass, funds for which it is hoped will soon be forthcoming. It is intended also to decorate the roof and the walls in polychrome. The architect is Mr. Slingsby Stallwood, of Folkestone, under whose directions the works have been carried out by Mr. W. H. Holdom, builder, at a cost of about 750*l.*

SURVEYORS' CHARGES.

MINNEY *v.* SYMES.

THIS was an action brought, in the Westminster County Court (before Mr. Francis Bailey, Judge), by a quantity surveyor, carrying on business in Parliament-street, to recover from defendant, who resides in Bristol, the sum of 19*l.* 10*s.*, for commission in taking out quantities for some buildings which the defendant had employed an architect to carry out at Bristol.

Plaintiff said he had been employed by the architect, Mr. Rogers, to make out the quantities for the work in question. The lowest tender was about 800*l.* odd, and for this tender he took out the quantities, charging commission on the amount at the rate of 2½ per cent. The architect had been paid, but on his (plaintiff) presenting his bill, he was told by defendant that his commission and all other charges connected with the work (which was never carried out) were included in the sum charged by and paid to the architect, and defendant therefore declined to recognise the plaintiff's claim.

John Rogers, an architect, said that in April last he was employed by defendant, who is a wholesale provision merchant at Bristol, to draw up plans for the alteration and improvement of some warehouses belonging to defendant at Bristol, but the work fell through in consequence of defendant's being dissatisfied with the expense. To take out the quantities for the preparation of the tenders it was necessary to employ a quantity-surveyor, and he (witness) selected the plaintiff, who ultimately sent in his bill to defendant, who refused payment on the ground that the work ought to form part of the amount which the architect (witness) had been paid.

Evidence having been given that it was the custom in the building-trade for the surveyor's charges to be taken as a separate item from those of the architect.

His Honour gave judgment for plaintiff for the full amount claimed and costs.

WARD *v.* PROCTOR.

IN this action (Hanley County Court), Mr. Henry Ward, of Hanley, architect, sued Mr. John Proctor, of Tunstall, builder, to recover 12*l.* 10*s.*, professional charges for supplying bills of quantities. The case was tried by a jury.

Mr. Ward stated that two years ago he prepared plans and specifications for the erection of a building for the Brownhills Pottery Company. Four builders, of whom Mr. Proctor was one, were invited by him to tender, and the letters inviting them were accompanied in each case by a copy of the bills of quantities. The messenger who delivered the invitations to tender said in each case that 2½ per cent. must be charged for the quantities. Mr. Proctor's tender was accepted, and in conformity with custom, he, as the successful competitor, was called upon to pay for the quantities, the commission being in this instance 12*l.* 10*s.* Mr. Proctor refused, however, to admit his liability, and hence the action.

Mr. Alfred Eardley, one of the partners in the Brownhills Pottery Company, was called to prove that Mr. Proctor was the successful competitor. Mr. E. Maddock, architect, Hanley; Mr. Cooke, builder, Burslem; and Mr. Blackhurst, builder, Burslem, stated that in limited competitions like this it was the invariable custom for the successful builder to pay the architect for taking out the quantities.

Mr. Hollingshead having addressed the jury for the defence, Mr. Proctor said when Mr. Eardley (not Mr. Ward) asked him to tender he declined at first on account of the unsettled condition of the trade. Mr. Eardley pressing him to tender, and subsequently bringing him the plans and specifications, he at length tendered, and his tender was accepted. Before he signed the contract he had not had the slightest communication with Mr. Ward, nor had he received the quantities. They came two days afterwards, but he did not make any use of them. The contract having been signed, they were of no use in enabling him to arrive at the price, nor did he use them during the progress of the building. Three weeks after he had commenced the work Mr. Ward came to him and said, "How about the quantities?" He replied that he could not think of paying for them because he had not received them in time for them to be of any use to him. The custom of the trade was that if an architect put plans and specifications into a builder's hands, and supplied quantities to the builder, telling him to charge for them in the tender, the architect was entitled to payment for the quantities. The quantities were not supplied to him until a fortnight after three other builders had tendered, and their tenders were found to be too high. He took out his own quantities.

Mr. A. Wood, architect, Tunstall, said if the quantities were not sent to the builder the architect expected to be paid by his client. If a building contract were undertaken without the assistance of the architect, the latter was not entitled to recover for the quantities.

The jury, after a few minutes' deliberation, returned a verdict for the plaintiff for the amount claimed, namely, 12*l.* 10*s.*

THE PROPOSED WORKS IN ST. PAUL'S.

WE have great satisfaction in being able to say that the "Committee for the Completion of St. Paul's" have postponed the consideration of the designs before them until November next. Moreover, Mr. Burges's charges have been paid; so that they will then resume their work perfectly free to adopt what may be considered the best course. We are informed that the gentlemen invited to fill the four vacancies in the committee have all declined to serve,—a significant hint to those now upon it. We have received a communication in support of the all-but universally condemned scheme, and being quite willing that our readers should hear what can be said in favour of it, have given the letter a place. We must add, however, that it does not seem to us to advance the object it has in view. The title is the writer's own.

THE "BEDIZENMENT" OF ST. PAUL'S CATHEDRAL.

SIR,—It is the boast of Mr. Burges' opponents that only one journal of importance has given him its unqualified support in the view he takes of the best means of completing St. Paul's Cathedral; and perhaps Mr. Burges' friends have done well to leave his case in the competent hands of a *Saturday* reviewer. Still, Professor Donaldson made an unfortunate suggestion in one of his recent letters to the *Times*, which has evidently received the approval of some, and, if acted upon, would redound to the discredit of all connected with the profession of architects. The question before the public, who seem to care very little about it, is a purely sentimental one; but the question before the profession is characteristically practical, since it aims at the deliberate rejection of the accepted sketch designs, and the inauguration of a general competition for other modes of decoration,—a competition which, begun in flagrant injustice, would probably terminate only a little less unjustly than many of the equally important ones which have been held during the last thirty years.

The opposition to Mr. Burges' scheme is based principally upon the fact that he proposes to cut away a part of the inside face of Sir Christopher Wren's walls. Now, sir, kindly grant me space to consider this and other proposals,—open to all sorts of objections, I freely admit,—in the oldest and most widely circulated of the professional journals. The majority of architects know that their subtle brethren of Perikles' time admitted little that could not be viewed by the light of their reason. The *naïveté* of the Mediæval builders, both European and Asiatic, has credited them with a reputation for constructive truth. Suppose the metropolitan cathedral rased to the ground. Let us imagine then what might happen if one of those old masters could be invited to rebuild St. Paul's, upon Wren's foundations, according to the Greek or the Mediæval systems of construction which are strangely identical in principle. He would first look at the sun peeping through soot and mist, or at clouds which send rain to soil, not to clean, the streets; and his choice of materials would probably fall upon granite for the basement walls, the external angles, piers, and projections; and upon glazed bricks and majolica for the general external surfaces of the building. He would cover the inside face of the walls up to a certain height with marble; not for the sake of brightness and light alone, but for cleanliness, and because it was near the eye and liable to be touched. The internal pilasters, instead of being mere decorative projections, and composed of courses of stone, would be monoliths of polished granite or deeply coloured marble—giving rigidity at intervals to the walls and forming points of support upon which to concentrate the weight and thrust of the arches and vaults above them. Their bases and capitals would be marble upon which would be fixed leaves and other ornaments in bronze. High overhead the inside of the building would be continued in hard stone to be ultimately enriched with mosaic decoration; and this for a cogent reason, because after their long and disastrous experience the Greek and Mediæval artists would not gild or paint large surfaces of stone which is now known to be liable to atmospheric action from the hour it leaves the quarry until it crumbles to dust. They would not scruple to use cement or plaster wherever distance would soften such materials to the view and guarantee them from the touch, for, moreover, plaster can be painted upon with impunity. Below, under foot, would be spread a carpet rich and varied in colour but of materials of uniform resistance to pressure and wear. As regards the windows it would be remembered that in the heart of London light has to be courted, not repulsed; and, instead of attempting to admit colour, it would be sought to brighten the colour of the walls.

Convinced of these things, it seems to me a mockery to compel an architect to have "reverend regard to the intentions of Sir Christopher Wren," and in default of knowing what such intentions were, it is certainly a contradiction to make him adopt the style of the best Italian architects of the sixteenth century. Wren never penetrated further into Europe than Paris; and his knowledge of Italian architecture was necessarily restricted to a few French buildings and the wandering Italians who built them. Surely the best way to complete St. Paul's according to the lights of an Anglo-French architect of the seventeenth century would be to employ one of the large decorating firms in Paris; in their vast workshops drawings and casts of every ornament which unhappy ingenuity has devised during the last three centuries can be procured with absolute exactness, and applied with experienced despatch. The result might be an interior, only a little less vulgar than that of St. Peter's, but there would be the satisfaction of knowing it to be correct. By using paint and *carton-pierre* the saints might both sprawl in effigy upon the walls, and lounge upon distorted pediments, each holding in one hand a garland of fruit or calico, while pointing with the other to gilt stars stencilled on a concave sky!

But Mr. Burges has attempted to think as in all human probability, Wren would have thought had he enjoyed the advantages of the present day. Not satisfied with making the interior of the cathedral clean, he wishes it to be always kept clean; and for this purpose he proposes to line the walls wherever the eye can easily distinguish, or the touch easily penetrate, with materials that will wash; and this without altering to a hair's breadth the contour of Wren's mouldings and pilasters, or the section of his walls. He has left most of the friezes intact, simply adding bronze figures which a fastidious posterity may easily remove. He has made use of the numberless panels in the building, and offers them in some cases for memorials of notable people, in others for bas-reliefs of scriptural subjects. Those unfinished portions of the stone surface in the spandrels of the arcades, in the soffits of the arches, in the coffers of the vaults, which were left plain by Wren,—simple *épannelage*, as French workmen call them,—are now to be carved, or sunk, or enriched. The stone is to be painted only here and there, and in lines and bits; mosaics, majolica, and bronze being the principal materials of colour decoration. The glass in the windows is to be white and clear, with a little colour to define some sacred subject portrayed upon it. The pavement is to be all marble, with a carpet of colour running the length of the building right up to the altar; and in the aisles it is panelled to emphasise the plan and echo the architecture of the vaults below. I submit that Greek or Mediæval artist, or Wren with modern advantages to aid him, could do little more. It is but architecture at second-hand, be it remembered,—the conclusion of a tale with an old plot, of which two-thirds are already published.

It is possibly a fault that the decorations of a House devoted to the worship of the Infinite and Unseen should be capable of rationalistic explanation. Instead of offering suggestions for which prosaic reasons are easily found, Mr. Burges might have revelled in poetical parable, and he would have probably obtained a legion of adherents had he indulged in license enough to be untranslateable. But herein the irony of circumstances is conspicuous, since the man who, nearly every one thought, would commit himself to some ultra-artistic eccentricity is now justly charged with an undue preponderance of common sense. Hampered with masters divided against themselves, Mr. Burges has tried to offend none when he ought to have thought only of pleasing himself. That his suggestions may be improved by study who would care to deny? His most devoted partisans will not refuse to admit the force of much hostile criticism. It is perfectly true, as one powerful journal has put it, that modern restoration, however learned, is only the churchwardenism of our grandfathers refined. But in this case there is no question of restoration; it has been simply decided to "bedizen" St. Paul's. Then let his colleagues at least pay the accepted architect of the new work the compliment denied to Wren's old masterpiece—let him alone; leave him to accomplish unfettered his first efforts in a task for which the liberal majority of a jealous profession believe him to be eminently fitted.

WILLIAM H. WHITE.

QUEEN ANNE'S STYLE.

SIR,—Why add the above name to the already abundant list of styles of architecture? To many of us living in the valley of the Thames the name, conversationally used, may seem explicit enough, and imply such a combination of the local material, brick, and of the forms suggested by local convenience, with modes of decoration, not always well understood, of which a very limited number of foreign travellers, or of readers of foreign books, had given descriptions, as being associated with Roman power, or with learning generally. But Queen Anne reigned over stony countries as well as over loamy countries. In distant counties local feeling for decoration would come in conflict with Italian fashion. Individual idiosyncracy would interfere to make the style of one building of Queen Anne's date very different from that of another. At that date, to have talked to a generally well-informed man about there being differences of style in the Gothic buildings of 500, 400, and 300 years anterior, would have seemed like drawing hair's breadth distinctions. Yet such a man might have seen abundant differences between different buildings of his own date. To him the styles of the merchant prince's suburban mansion, of the Tom Tower at Oxford, of Blenheim, of St. Paul's Cathedral, and of St. Mary-le-Strand, would perhaps have been so strongly marked as to enlist his fervid approval for one, whilst another called forth his utter detestation. And are we now to lump them altogether in an undistinguished mass? And is not the doing so within the architectural profession calculated to raise a smile on the countenances of outsiders?

NEMO.

TROY.

ONE reads with no little surprise the following passage, signed T. A. M., in the *Builder*, p. 543:—Homer "states that the spears were of ash—a very primitive weapon indeed."

A spear is not necessarily a spear-head, wherefore it seems that ashen staves might make very good spears; the question how they were tipped would receive light from other parts of the poem.

The uses of metal in Homer are a study of itself, the general impression being that he describes weapons from the later bronze age point of view: thus the word Χαλκός represents metal in general, also brass and copper in particular. Σίδηρος (iron) does occur, but not as describing a material in common use; on the contrary, it is a rare, costly, and unmanageable sort of article.

If I understand Dr. Schliemann's standpoint aright, the more primitive weapons found at Hissarlik represent the subsequent relapse into a stone age, after the expulsion of the Dardanian heroes.

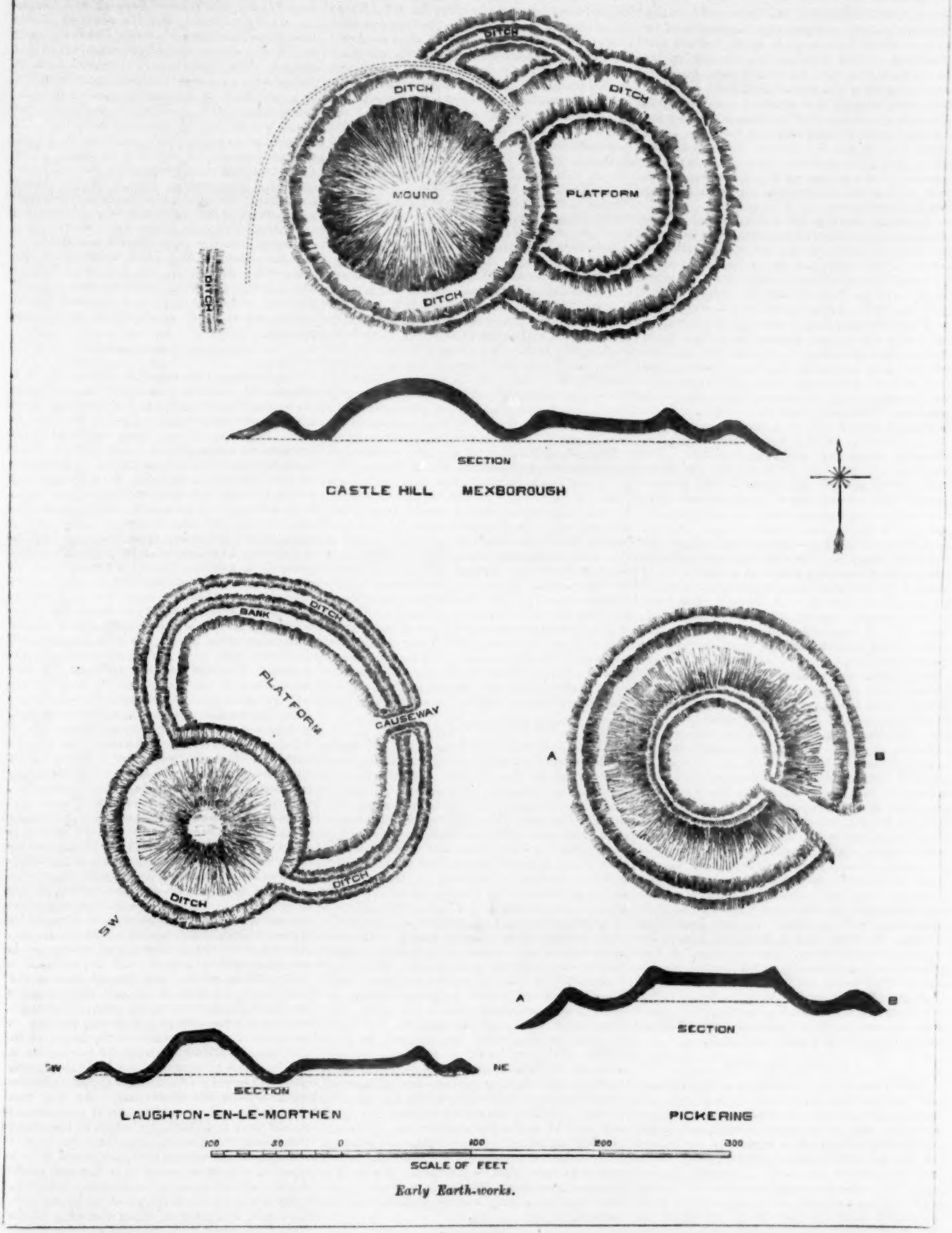
A. H.

STAGNATION OF TRADE THROUGH HIGH WAGES.

THE President of the South Midland Institute, Mr. Edward Jones, mining engineer to the Lillishall Coal, Iron, and Engineering Company, speaking last week in Wolverhampton, observed that the stagnation of trade was unprecedented.

From whatsoever country English firms canvassed for orders, the same reply was returned, "Your English prices are too high," and in the prevailing stagnation there would be, he might boldly assert, no change until prices all round were lowered. Nor did he fear to say he hoped they soon would be. Meanwhile he considered, as well as all business men, that the present action the operatives was most distressing and hurtful of to the whole country.

The Sewerage of the City of Winchester is again about to be seriously considered by the Town Council. How best to dispose of the sewage is to be inquired into by an inspector from the Engineer Department of the Local Government Board.



Early Earth-works.

EARTH-WORKS OF THE ENGLISH PERIOD.

LAUGHTON-EN-LE-MORTHEN.

The Castle-hill.—This very perfect and very interesting earthwork, an earthwork with a history, stands in a grass-field a few yards west of the parish church, the lofty spire of which is a well-known landmark. The churchyard, and possibly the church itself, have encroached somewhat upon the boundaries of their older and secular neighbour. The earthwork is composed of the Castle-hill and an enclosed area appended to one side of it. The hill is a wholly artificial mound of earth, conical in form, with a flat circular top, about 25 ft. in diameter, while the base is about 112 ft. It rises about 30 ft. out of a circular ditch, 12 ft. deep, measuring from the level of its outer side, and about 42 ft. broad. Outside this ditch, resting upon it, and covering about one-third of its circumference on the north-eastern quarter, is a more or less lunated enclosure from 5 ft. to 90 ft. across in depth, also included within a ditch which communicates at each end with that of the mound, so that, of this outwork, the main ditch forms the rear or concave defence, and its proper ditch the convex defence or that to the front. Along this convex edge, a strong bank, 8 ft. high and 15 ft. broad, crests the ditch, which is about 20 ft. broad, and 6 ft. below the exterior level. The bank is cut through and the ditch traversed by a narrow causeway towards the east-north-east, no doubt representing the original entrance, which probably was over a timber bridge. There may have been other works, but they are not at this time very apparent. In the churchyard, a little north of the church, is a straight bank, now very low, which may, as at Barwick, have covered the approach to the mound, but is more probably a trace of a Roman camp, hereabouts not uncommon, and for which the position is very suitable. This is a very common, perhaps the most common type of a Saxon or Early English dwelling; for the arrangement is not

concentric as at Barwick, but the mound is in the general enceinte, of which two-thirds or so of its proper ditch form a part, as at Tickhill and Tonbridge. Had it suited the Norman settler to inhabit this spot he would have placed a shell keep upon the mound, and built a curtain round the edge of the attached area, bringing its ends up the slopes of the mound to the keep, as at Hawarden, Warwick, or Tickhill. Here, as at Huntingdon, the ditch of the mound shuts it off from the rest of the place. This is not the case at Hawarden, nor at Tickhill, unless indeed the ditch at the latter place has been filled up on the inner side.

Laughton belongs to a district full of the traces of Saxon rule and occupation. "Morthen" is thought to represent the moor-portion or division, and Laughton is no doubt Law-town, the seat of an early Saxon jurisdiction. Laughton appears in the Domesday as the "aula" of Earl Edwin. "Ibi habet comes Edwinus aulam," and to it belonged fifty-four or fifty-five carucates of land. Edwin was a powerful person, being himself Earl of Mercia, the brother of Morcar, and with a sister married to Harold. Laughton was the head of a soke which contained the townships of Laughton-with-Thropum, north and south Anstan, Thorpe-Salvin, and Wales. There seems reason to add to these four more, Lettwell, Firbeck, Gilding Wells, and Woodsetts, forming altogether an extensive fee. The English lord held also Slade-Hooton and Newhall, and a part of Dinnington. The present parish still corresponds with the ancient soke, although its ecclesiastical dependencies or chapelries of Wales, Anstan, Thorpe, Letwell, and Firbeck were not attached to it until the reign of Henry I. The church is not actually named in Domesday, but it is undoubtedly of early English foundation, a presumption enhanced by its dedication to "All Saints." Laughton, therefore, as the mother church of a large parish, the head of a considerable soke, and the residence of an English Earl, was from remote times a considerable place, and there is great fitness in its position, and in the spire of 185 ft. high, which later piety has combined with traces of masonry of the age of Henry I. Mr. Hunter takes Laughton to be the "Mortigton" or town of the Morthing, mentioned in the will of Wulfric Spot, the other places named in this early document being around it. The entire soke of Earl Edwin was granted by William to Roger de Buisli, and under his rule became a member of the Norman Honour of Tickhill, though in the Survey it takes precedence of that place, being at the head of the Earl's possessions. The descent of Laughton from the Conquest is that of Tickhill. It was always held by its lords in demesne, the rest of the Honour being in the hands of tenants, so that the tradition of the Empress Maud having lived here may well be true. In the foundation charter of Blyth, Roger de Buisli grants the tythe of the residence, "decima aulæ," so that the hall or house probably survived the Conquest. Long afterwards, 42 Henry III., Geoffrey de Lusignan held Laughton *in capite* from Prince Edward, and 1 Edward II., he was there seized of a messuage and an acre of land, which no doubt represented Earl Edwin's Hall.

BARWICK-IN-ELMETE.

Hall Tower-hill.—This also is a very remarkable earthwork. It is wholly artificial, and stands on very high ground in a grass field about a furlong west of the parish church, and almost within the village. The ground is the highest in the immediate neighbourhood, and slopes rapidly towards the west. The work is composed of a conical mound, known as Hall Tower-hill. It has a slightly hollow summit, no doubt originally circular, and 40 ft. diameter, but which has been rendered slightly oval and otherwise affected by the slipping off the earth. It is about 30 ft. high, and covers a base of about 200 ft. diameter. It stands in and rises out of a circular ditch, from 6 ft. to 12 ft. deep, measured from the outer level, and here and there partially filled up. This circle is placed within a platform of irregular figure, the exterior limits of which are from 15 ft. to 60 ft. and even 100 ft. from the inner ditch, and which is surrounded by a bank of earth, which, to the south, where the platform is 15 ft. wide, rises about 8 ft. above its level. On the north side, the platform is 60 ft. wide and the bank 6 ft. high. Beyond the bank in each direction is a ditch. The south is the weak side, and there the bank is at its highest and the ditch at its broadest. This higher part of the bank is about 240 ft. long. It ends abruptly towards the east. These works are less plainly seen on the east and west sides. On the latter the natural slope rendered them of rather less consequence. The entrance was apparently on the east side, from the village. At the north-east quarter, where a new burial-ground encroaches somewhat on the works, the northern bank, instead of sweeping round the platform, seems to have turned in a direct line eastward, possibly to cover the approach. Attached to the above work, on the north side, is, or was, a large and more or less circular area, enclosed within a bank and ditch, and known as Wendell-hill. It is now very obscure, partly from tillage, partly from some cottages and their gardens. Whittaker mentions it.

It is to be remarked that this Barwick earthwork is concentric, that is to say, the mound and its ditch stand within and clear of the above described second inclosure, more or less perfect, to the outside of which Wendell's Hill is an appendage. Also, it may be remarked that here, as at Laughton, and unlike Old Sarum, there is no bank on the outer edge, or counterscarp of the ditch. In its detached mound and surrounding area Barwick may be likened to Pickering Castle (not the camp), although the earth-works there, being governed by the character of the ground, and altered to some slight extent by the later masonry, present more of an angular outline.

Barwick, or Berwick, usually is a name applied to an appendage to a manor. Mr. Whittaker suggests that this particular name may have been Bergwic, the village of the berg or burgh, or castle, an etymology which would carry back the earthworks to a period before the parochial nomenclature was fixed, early in the history of the Northumbrian kingdom. However this may be, Barwick is the reputed residence of Edwin of Northumbria, at the time of his conversion by Paulinus in A.D. 620. The works are certainly very unlike any of known Roman or British origin, and closely resemble those of the district admitted to be Saxon. Whittaker is disposed to regard Wendell's Hill as a corruption of Edwin's Hill. There is no trace of masonry upon or about these earthworks, and no tradition that they were ever inhabited by any Norman lord.

THE RIBBLESDALE MOUNDS.

About three miles below the town and castle of Clitheroe, the Ribble receives, on its right or western bank, the Hodder, the two streams forming the boundary of a cape of Yorkshire, which there projects sharply into Lancashire. The combined waters, thus augmented considerably in volume, are projected against the mass of high ground to the south, and encircle within their sweep a broad expanse of perfectly level meadow, evidently deposited as the river has shifted its course. In the centre of the bend, upon its left or southern bank, the river is joined by a third stream, the Calder, which flows down from Walley Abbey, placed upon it about two miles higher up. Here, in this water-girdled flat, a very strking position, are two large "mounds," so entitled on the Ordnance map. They are placed about a furlong apart, and about the same distance from the river. The larger and best defined, that to the south, is oval, or somewhat pear-shaped in plan, about 27 ft. by 50 ft. on the table-top, and about 30 ft. high. The top is scarred as though it had been built upon, or perhaps partially opened. The other is less defined in outline, and not quite so high. Neither has any surrounding ditch, nor any sort of appended earthworks. They are possibly or probably sepulchral, and although placed most conveniently for defence, do not appear to have been so intended. The walk to the river side from Whalley is a pleasant one, and there is a ferry a short distance from the mounds.

ROTHERHAM.

Upon the right of the Tickhill-road, scarcely clear of the town, is a deep valley, containing a brook which descends from the south-east and flows across the town to feed the Don. Upon the left bank of this stream is an oblong knoll, which looks very much as though it had been a Saxon earthwork.

PICKERING.

On the right bank of the Beck, a little below but in full view of the castle, is a curious earthwork of the circular type so common in Yorkshire. It is placed on the summit of a round hill, 200 ft. or so above the river, and a few score yards to the west of it. It is composed of a central mound and circumscribing ditch. The mound is not, like those of Barwick and Laughton, wholly artificial, but the contents of the ditch have been thrown inwards, and the ground thus increased to a height has been trimmed and scarped. The mound, as at present seen, is conical with a circular and flat top, surrounded by a light bank or breastwork about 4 ft. high. The mound is 90 ft. in diameter at the top, and about 190 ft. at the base, and 20 ft. high. It rises out of a circular ditch, about 10 ft. broad, and at present not above 6 ft. deep. The entrance seems to have been on the south-east quarter. The position though slightly lower than that of the castle, commands a much finer and more extensive view, not only of the town and castle, and up the rocky ravine down which the river descends from the Cleveland Moors, but far eastward and south over the fertile vales of the Seven and the Rye, from Kirkby Moorside and Helmsley to the wooded ridge of Slingsby and New Malton, a fair and fertile region, and one full of objects of antiquarian interest.

CASTLE-HILL, MEXBOROUGH.

The earthwork so called is situate about a mile east of the town of Mexborough, and upon the eastern and subsiding end of the ridge upon a higher and broader part of which the town is built. The Don is here flowing eastwards about a quarter of a mile distant, the earthwork being on its left bank. Also it is placed between two roads which unite a little to the east of it and lead to the adjacent castle of Conyngsborough. Thus although the ground to the west is considerably higher than the work; that to the north, south, and east is much lower, and before the country was drained or fully inhabited, was probably a marsh. To the immediate north also lies the course of the Dearne, which joins the Don about two miles lower down. The site, therefore, though not lofty, was on the whole well chosen, and was especially strong on the west, whence the Danes, the most dangerous of the Saxon foes, were likely to make their approach. The site actually occupied by the works is well marked, about 50 ft. above the adjacent ground, and perhaps 80 ft. above the Don. The work is composed of a circular mound, girt by a ditch, appended to the outer side of which are two wards or enclosures, each with its bank and ditch. The mound is about 25 ft. above the adjacent ground, and nearly 35 ft. above the bottom of the ditch. The top is no longer flat, having been rounded by time and weather so that its original diameter is lost, also it is scarped as though it had been dug up. At the base it is about 120 ft. diameter, and the ditch may be 12 ft. more. On the outer edge or counterscarp of the ditch is a bank, steep where the ground is level, small and low where it falls more rapidly. East of the ditch is a lunated enclosure, the notch being the side abutting on the main ditch. This area is about 120 ft. east and west by 130 ft. north and south. It is contained within a bank, and beyond that a ditch. Thus, so far, the general plan of the work is a figure of 8, the mound occupying one circle and the outer ward the other. The notch between the two circles is, however, covered on the north side, by a smaller work, about 45 ft. diameter. This, resting upon the two circles, is itself about a quarter of a circle. It also has its bank and exterior ditch. The approach to the work is from the south-west. As the way ascends the ridge, on the left is seen a small curved bank and ditch, by which it is covered from the west. On reaching the outer edge of the ditch of the mound the road skirts it for a few feet, and then passes into the rear of the lesser ward, by means of a causeway which divides the main ditch from that of its outwork. Thence it is continued along the edge of the main ditch, until it reaches two causeways, one leading into the larger ward, the other upon the foot of the mound, the entrance to which was thus protected by the junction of the two wards. The works are wholly artificial, and have certainly been both higher and deeper, and probably rather more extensive. Enough, however, remains to show that the work belongs to the same class with Laughton, Berwick, Wincobank, Pickering, and Tickhill, and therefore has been a Saxon or Early English strong residence. According to Matthew of Westminster, the Saxons were defeated by the Britons in this neighbourhood, A.D. 487, at Maesbeli, which has been supposed to be at or near Mexborough, and no doubt in those early days the Yorkshire dales, and especially those about Doncaster, and the old Roman seats, were the scenes of many such

contests, although probably such an earthwork as Castle-hill belonged to a more settled period, when the Saxon leaders had possessed themselves of landed property, and had laid the foundations at least of law and order. Mexborough appears in Domesday as "Mechesburg," which seems to be a recognition of the burgh or castle. Ulfac, Uichel, and Ulcheld then held five carucates under Roger de Buisli, the tenant in chief. Roger's lot included the four great earthworks of Tickhill, Laughton, Barwick, and Wincobank.* G. T. C.

"THE DREAM OF PILATE'S WIFE."

IN the work bearing the above title, M. Gustave Doré has added another to that class of what may be termed religious-spectacle pictures which is so popular in England. The mention in the New Testament account of the dream by which the governor's wife had been troubled in reference to "that just man," is taken by the painter as the basis of a kind of scenic display of the historical progress of Christianity, in which the future procession of church dignitaries and Christian kings, in the train of the then despised founder of Christianity, is shown by an angel to the Roman lady. To the left is a staircase, on which the dreamer stands, with the angel hovering on the other side of the balustrade in a rather unaccountable kind of manner. To the right is the figure of Christ, in a strong light, amid a group of Roman soldiers preparing the instruments of execution. Beyond this foreground group stretches a vast crowd of lessening figures, going off into a cold blue distant gleam, in the midst of which, in the distance, the cross is finally seen the supreme and centre object, radiating light upon the crowd below.

The figures of the dreamer and the angel strike us as singularly weak; but the foreground figures in the other portion are more precisely and clearly drawn and grouped than is usual with the artist, while it is due to M. Doré to say that the central figure is in some respects very successful indeed, the countenance differing considerably from that of ordinary representations of Christ, and presenting an expression of combined dignity and grief which is very pathetic without being weak or sentimental. This is the redeeming point in the work, which otherwise we cannot look at with admiration or satisfaction. The whole treatment is entirely conventional in feeling (except what we have named, as to the principal figure); the dream of Pilate's wife we should have taken to be something of a much more human and genuine character; the natural reaction of the mind against cruelty and persecution. As to the merits of the painting, in regard to effect and colour, they appear to us to be exactly those which belong to effective scene-painting; a hard glitter and a violent opposition of heated and cool colours. What the painter has apparently aimed at he has no doubt succeeded in attaining; but it is that which is false in feeling and false in art, and can have no lasting value. The example of Martin, whose aims and merits were very much the same as those exhibited here (except that Martin's figures were certainly inferior to Doré's) ought to be a warning to those who paint and those who admire such things. Where are Martin's "Plains of Heaven" and "Last Judgment" now? Chromolithographs of them are found in the bedrooms of country inns. M. Doré can do work which Martin never could do; in certain qualities of engraving, and in grotesque design, he has hardly a rival. He had much better be doing good work of a kind which has a real value, than be bidding for popularity with the multitude by these melodramatic productions. Such things do absolutely no good, either to religion or to art, or to the artist; we wish it were equally certain that they do no harm.

THE PLAGUES OF DUBLIN.

THE powers are being moved at last to do something to abate the nuisance caused by the sewer pollutions of the Liffey, and aggravated by the continual neglect and supineness of the municipal body. Dublin has experienced many periodic visitations of the plague since the twelfth century, but for many years the capital has been suffering severely from the presence of a chronic one. Several days ago, the Lord Chief Justice of Ireland, in the Court of Queen's Bench, threatened to adjourn the proceedings of the Court if some steps were not immediately taken to have the Liffey nuisance abated, and at the same time he rated pretty warmly the Corporation for their continued neglect of the river. Two or three days after, the nuisance was made the subject of a motion in the House of Commons, and almost *pari passu* came the action of the Lord Lieutenant of Ireland. The Viceroy called upon the Corporation to move; at the same time his Excellency submitted, through Mr. Roberts, of the Board of Works, a plan for the Corporation to adopt for the temporary abatement of the nuisance, pending the construction of the main drainage. The Viceroy left it optional with the Corporation to adopt his plan or one of their own, but in either case he informed them they must proceed at once, or the Board of Works would be commissioned to proceed, and in that event the Corporation would be charged with the cost. Then ensued a series of meetings of the town council, characterised by the most disgraceful scenes of factious opposition, one party or body opposing the other. Resolutions and counter-resolutions, and amendments to the end cropped up and were knocked over; lawyers and engineers were consulted, and Babel reigned triumphant for awhile. Counsel stated, on looking over the several Acts bearing upon the port, the city, and the river, that the temporary remedy rendered works necessary that would interfere with the bed of the Liffey, and that portion of the river was under the control of the Port and Docks Board, and the Corporation could not touch the bed without getting the authority of that Board. The powers of the Corporation were derived from being a Nuisance and Sewers Authority under the Sanitary Acts, and it appeared the municipal body had full authority to pollute the river, but none to interfere with its bed with a view to its cleansing. Here we see the darling evils of divided sanitary authority, which is working such beautiful results under the present Public Health Acts. The Port and Docks Board can proceed (if they like) against the Corporation for interfering with the bed of the river, removing its noisome deposits, or constructing works there with a view of keeping up a certain level of water; and, on the other hand, the Corporation can proceed against the Port and Docks Board for the abatement of a nuisance. At the same time they will render themselves liable to a cross action, as the Port and Docks Board can compel the Corporation to stop the pollution of the river by preventing the sewers from discharging their filth therein. Unless both these public bodies agree to waive their privilege, the Local Government Board, who are vested with sufficient power under the Sanitary and Public Health Acts, will have to step in and perform the necessary work.

The sanitary authority and powers vested in the Corporation plainly and clearly enable them to take steps to abate the nuisance, and these powers may be set in motion either by proceeding against the Port and Docks Board, or independently with the sanction of the supreme authority. The temporary plans submitted by the Lord Lieutenant comprised the erection of a form of weirs to be placed obliquely across the river, at certain distances, the length to be divided into three reaches. Sluices will be provided somewhat similar to the French barrage system, and the navigation will be secured by the adoption of certain appliances worked in connexion. At low water a stated depth will be maintained, and, as the foreshore will be always covered, the effluvium that arises at present will be absent.

After all, this is only a temporary experiment rendered necessary for the abatement of a most intolerable nuisance, pending the prosecution of the main drainage works, which the Corporation are to be compelled to proceed with. The cost of this temporary scheme is estimated at 1,200*l.*, but it is more than probable, if the work is performed by the Corporation instead of the Board of Works, or the Port and Docks Board, it will greatly exceed that sum.

At the last meeting, after two days' discussion and wrangling, the Corporation resolved, by a small majority, to postpone all action upon the main drainage scheme, until the Lord Lieutenant's plan, or one in consonance with it, is carried out. Sir John Arnott has since proposed, in a letter to the Dublin Town Council, to cleanse the Liffey at his own expense, on a plan nearly similar to that suggested by the Lord Lieutenant. A deputation has been appointed to consult with the Port and Docks Board as to the feasibility of the plan and the propriety of accepting the offer.

NEW ORPHANAGE, BARTRAMS, SOUTH HAMPSTEAD.

THIS establishment is being erected for the religious order of Sisters of Providence, on a well-chosen site, from the designs and under the superintendence of Mr. C. G. Wray, architect, and is arranged in three separate divisions, namely, an orphanage for 150 children, a convent, and a ladies' boarding-school, all having a covered approach to a chapel forming part of the structure.

The first portion,—namely, the orphanage and chapel,—is completed, and has been opened by Archbishop Manning with much ceremony.

The buildings are faced with Malm bricks, with Ancaster stone bands and dressings, and internally have fire-proof floors constructed of Dennett's arching and wrought-iron girders. The chapel has a handsome open-timber roof and traceried screen. The ground floor of the orphanage is divided by removable partitions, so that the whole area can be thrown open for exhibitions, &c. The infirmary will be over the convent, and the entire space in the roofs is utilised for drying and ironing rooms, there being a lift to the same from the laundries, which are on the basement floor.

Messrs. Robins & Co., of Clapton, are the contractors for the works; and the warming arrangements have been carried out by Messrs. Bacon & Co., of Oxford-street.

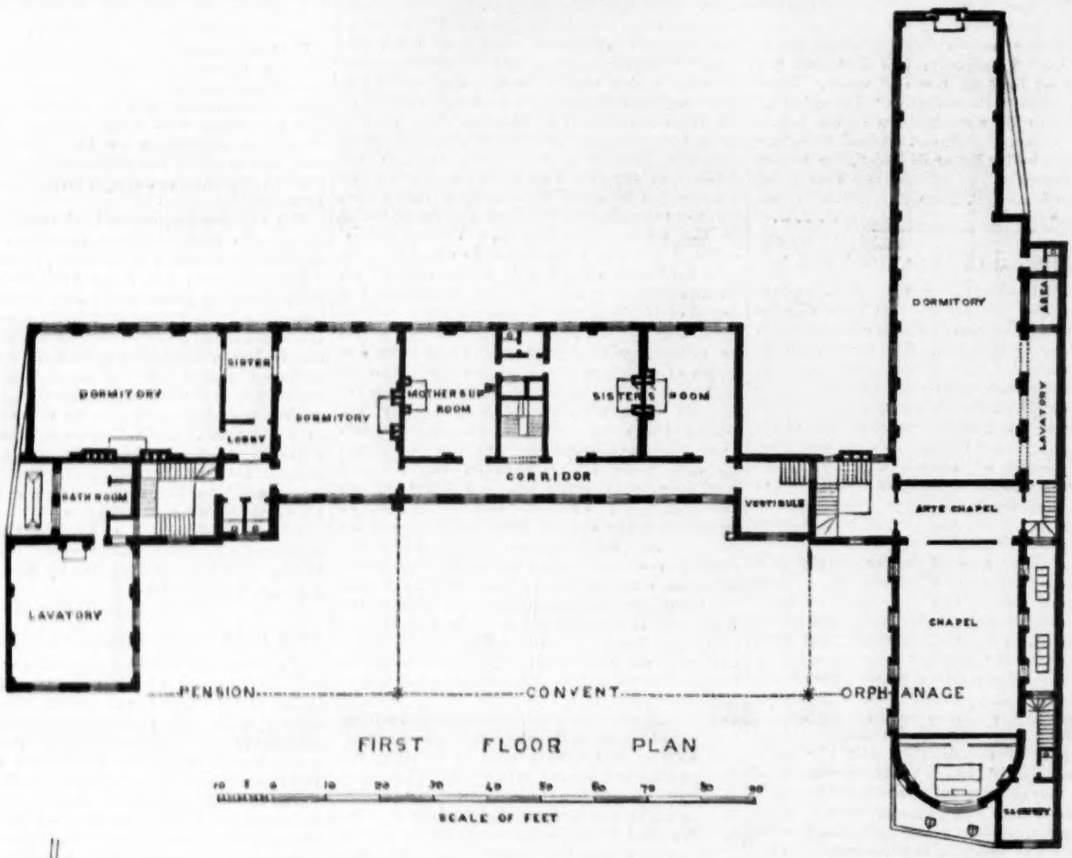
NEW BANK-NOTE PRINTING BUILDINGS.

A LARGE new building of some architectural proportions has just been erected in Farringdon-street, nearly opposite the Metropolitan Railway Station, which is to be exclusively used for the printing of bank notes and drafts. The building, which has been erected for Messrs. Bradbury, Wilkinson, & Co., has an elevation to Farringdon-street 70 ft. in length, and about 55 ft. in height, and contains four lofty stories. The main central entrance of stone is a prominent feature in the elevation. It is about 11 ft. in width. On each side there are piers, enclosing a recessed pointed arched doorway, supported by columns. The basement is carried up considerably above the street level, in Portland-stone. The rest of the elevation is in yellow brick, with stone dressings, and red and black brick ornamentation. The ground-floor, and the first, second, and third stories, have a range of eight double windows, the fourth story having eight triplet windows. Immediately above the ground-floor windows there are panels filled in with terra-cotta. Between the windows from the ground-floor to the top of the second-story windows, columns are carried up, surmounted by capitals in terra-cotta, the windows being recessed, and having the appearance of being continuous to the top of the second-story windows, which terminate with a Gothic arch, composed of stone, and red and black brick, this portion of the elevation representing a range of eight lofty windows, about 25 ft. in height. The upper-story triplet windows have arches in red brick. A deep string-course in red and black brick marks the division between the ceiling of the first floor and the floor of the second story. There is a return frontage carried along Charles-street, uniform in its architectural features with the elevation already described. The interior of the building is spacious, and fitted up with every convenience for carrying on the special business for which it has been erected. The basement is set apart for the actual printing department of the establishment, and for this purpose a large number of machines have been erected. Messrs. Harding & Bond, of Bedford-row, are the architects; and Messrs. Elkington & Co., are the builders.

THE PAYMENT OF THE ARCHITECT FOR THE LAMBETH NEW INFIRMARY.

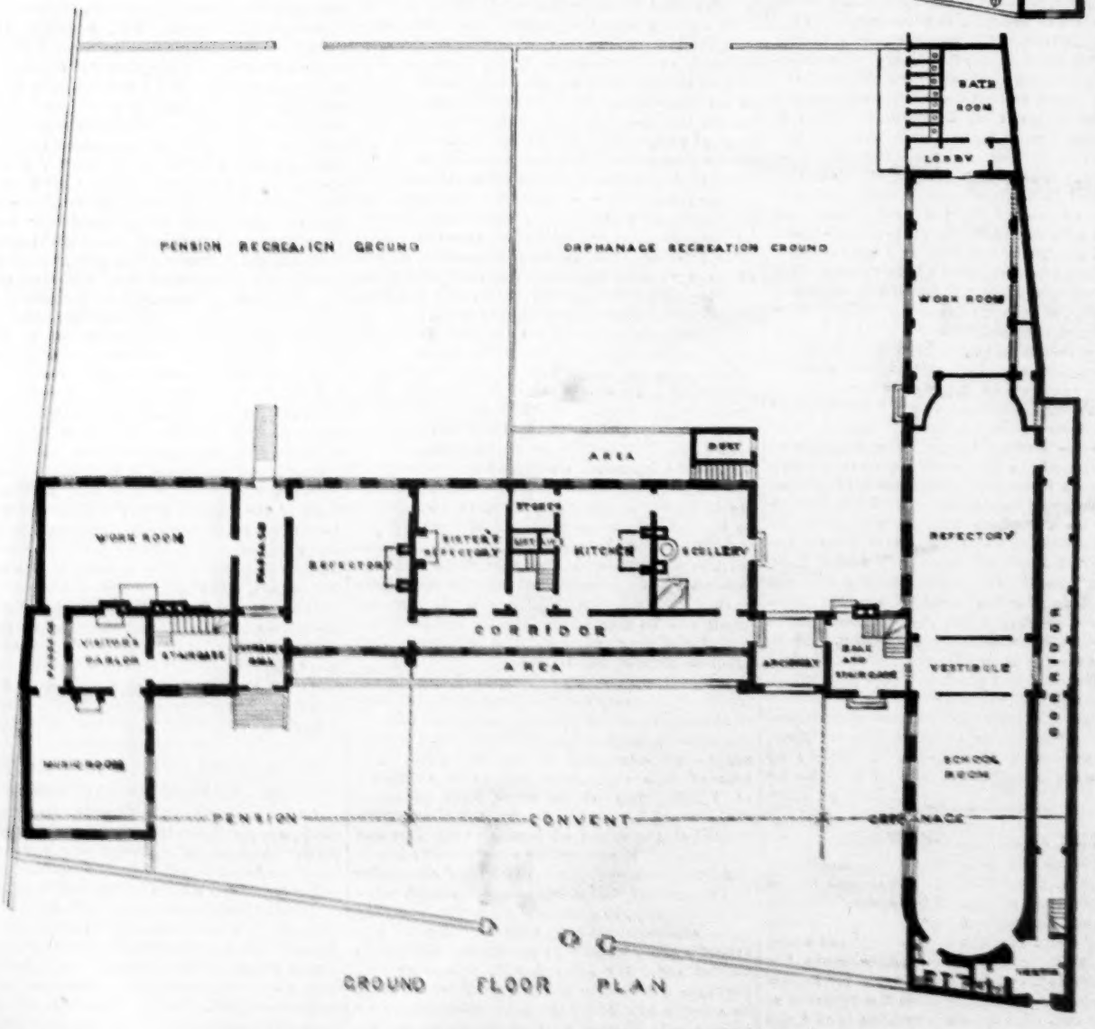
AT the meeting of the Lambeth guardians last week, a report from the committee of the whole Board was brought up respecting the arrangements to be made with the architect of the new infirmary, Mr. F. H. Fowler, and they recommended, if his plan was approved of, that he be paid 3½ per cent. commission on the whole amount. It was remarked by a member present that if it was to be a lumped sum, and extras were to occur afterwards, it would be imposing on the architect. It was, however, moved and seconded that the payment be a fixed sum, and the voting was nearly equal, the amendment being only lost by a majority of one. The original motion for the payment of the architect at 3½ per cent. was then put and carried.

* To be continued.



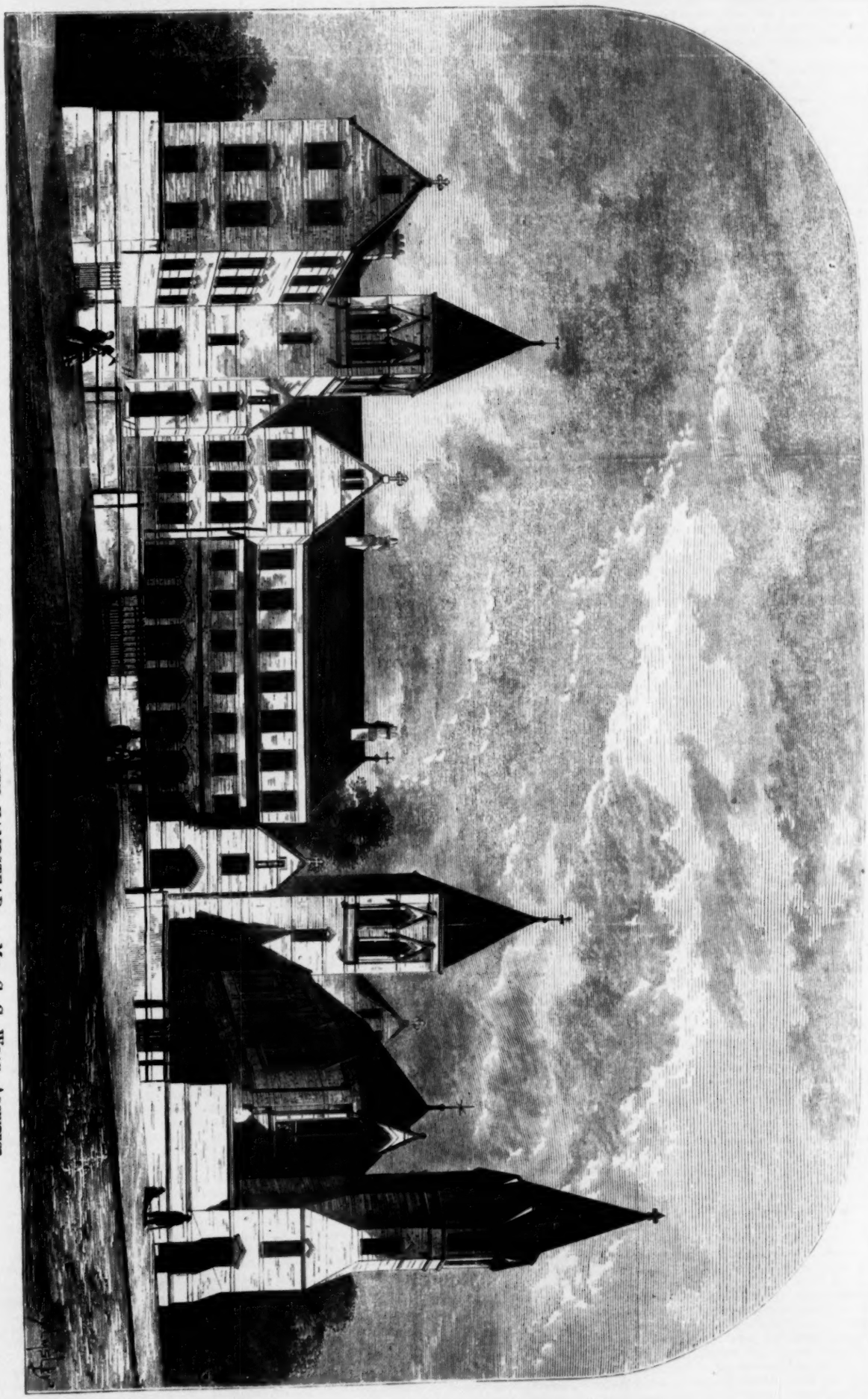
FIRST FLOOR PLAN

SCALE OF FEET



GROUND FLOOR PLAN

NEW CONVENT, SCHOOL, AND ORPHANAGE, BARTRAMS.



NEW CONVENT, SCHOOL, AND ORPHANAGE, BARTRAMS, SOUTH HAMPSTEAD.—MR. C. G. WRAY, ARCHITECT.

BUILDING IN CONCRETE.

AT the Annual International Exhibition, in the portion of waste ground near the machinery room, known as the Western Annexe, there are four firms exhibiting buildings of concrete in course of erection. With reference to these, Mr. W. C. Homersham, C.E., contributes an article to the *Journal of the Society of Arts*, part of which we quote:—

One exhibitor, Mr. Lish, is showing a material he calls "Tilo-concrete." In this case a single room with door and window is being built, and the material is concrete faced with tile and terra-cotta mouldings. The tiles are arranged in a supporting frame in their proper position, and concrete filled in behind. They are formed with a dove-tail or feather behind, round which the concrete sets and holds them fast. The effect is thus produced of a smooth tiled wall. The cost is stated to be about the same as that of the best brick-work. A principal feature of this exhibit is the method of construction employed. At the commencement of the work "guide screws" (in place of the external uprights now in use) are set in the foundation trenches and "plumbed," when the concrete for foundations is filled in round them; after this material has set, these "guides" are screwed up to receive cross-heads, from which the wall panels are suspended. For building ordinary concrete walls plain wooden panels are used, but when the work has to be faced with tiles a skeleton iron panel is employed with rebated bearers to retain the tiles accurately in position until each day's work has set. When one portion is sufficiently set, by means of the screws the panels and the platform which rests on them, and serves instead of a scaffolding, are raised, and the work continued as before.

There is one fact noticeable in all the exhibits in a greater or less degree, and that is the ignorance shown by the constructors of the great strength of concrete to bear strains, tensile and other. There can be no doubt that the insertion of the wrought-iron rolled joist in the flooring is a source of weakness rather than of strength. Portland cement concrete will not adhere to a surface of iron with anything like the same amount of force that the particles of which it is composed hold to each other. In that building, also, which is entirely covered with a domed ceiling in concrete, a mistake appears to have been made. Are walls 12 in. in thickness, and nearly as many feet in height, adapted to take the thrust at the top of a very flat arch? Would not a floor of uniform thickness, and containing less material (concrete), have been the stronger? To enable the reader to form an opinion for himself on the subject of the latter question, some facts will be hereafter given concerning the strength of Portland cement concrete. A thorough examination of the structure must alone convince the most sceptical on the point of the great value of concrete in Portland cement as a building material, not only for the walls, but for the flooring of every story and the roofing of houses of every description. The overhanging corner of the flooring at the well for the stairs, in no way supported from below, is quite firm and free from vibration when walked upon, or even when jumped upon by two youths of an aggregate weight of over 2 cwt. The floor is 7½ in. in thickness.

From the result of experiments made some years since, it can safely be affirmed that the staging necessary for carrying a concrete floor, in the green or wet state, of a room, say 12 ft. 6 in. in width, by 25 ft. or any other dimension in length, may be struck in a week after the completion of the floor if the concrete be only 6 in. in uniform thickness, and gauged in such proportions that every cubic yard when *in situ* contains four bushels of cement and six bushels of clean, sharp, silicious sand. One month after the concrete has set, the floor would be capable of sustaining an equally distributed load of 1 cwt. per foot superficial, and twelve months after, an equally distributed load of 4 cwt. per foot superficial. If the thickness of the flooring be increased to 12 in., and the concrete be gauged as above, a room 19 ft. 6 in. in width, by 40 ft. or any other dimensions in length, may be covered, with the results as to strength the same as those given for the room 12 ft. 6 in. in width.

The roof of a room 12 ft. 6 in. in width may be formed with a layer of concrete 4 in. in thickness, and that for a room 20 ft. in width need not exceed 9 in. in thickness. Concrete in Portland cement is admirably adapted for the construction of roofs of buildings; concrete is far less pervious to water than the best brickwork, and when its surface is rendered with a thin coating of compo gauged one of Portland cement to one of sand, it is perfectly impervious to damp, though it be kept covered with water. The fact may not be generally known that Portland cement compo has not that tendency to peel off when on concrete in cement, which impairs its efficacy as a facing for brickwork. This is accounted for partly by the surface of concrete (being rough) forming a capital key for the compo, but principally by the far more important fact, that there is no damp in Portland cement concrete after it has thoroughly set. Brickwork absorbs and retains moisture, which, being acted upon by frost, swells, and lifts the smooth surface of brickwork. Such cannot be the case with concrete.

Not only is a coating of Portland cement compo valuable on the top surface of the layer of concrete forming a roof, as a protection against damp, but it forms an excellent surface for the flooring of a building. A surface of Portland cement compo resists the action of the tread quite as well, if not better, than some of the superior sorts of stone used for making steps.

The people might here derive great advantage from the practical manner in which the exhibitors have explained their respective ideas on the subject of building in concrete. The houses they are in the act of constructing will doubtless do much during the season to convince many a visitor that it is possible to construct not only cottages but mansions the most extensive in concrete. A structure composed solely of concrete in the stairs, floors, and roof, as well as walls, is practically monolithic, and not only perfectly water and damp-proof, but as nearly as can be conceived proof against the ravages of that all-devouring element—fire. By forming the division walls between the various rooms, of Portland cement concrete, each room will be rendered sound-proof, concrete being an excellent non-conductor of sound. The concrete for the walls of buildings need not contain more than three bushels of Portland cement and six bushels of sand per cubic yard. In critically examining the structures in concrete being constructed in the Western Annexe, the visitor must not lose sight of the fact that the exhibits are made by firms desirous of calling the attention of the public to particular forms of apparatus for facilitating construction in concrete, and not by architects desirous of ventilating their professional abilities in the art adapting a comparatively speaking novel material to building purposes. Had the case been otherwise, there is no reason to doubt there would have been no drawback to the efforts made by the exhibitors in an architectural point of view, such as there is at present. The surfaces of the walls and ceiling of some of the structures are in the rough state, and exemplify the truth of that which has been stated above concerning the excellent key that can be left on the surface of concrete for a rendering of compo. The inner and outer surfaces of the walls, &c., of the building erected by one of the exhibitors are finished off, and have a very neat and clean appearance, though it must be owned the sight reminds one too much of our suburban builders' style of architecture. The writer has seen some very handsome face-work on concrete made by embedding split flints therein, with the split face exposed. How many lovers of good architecture have walked miles to examine a particularly fine piece of flint-work, such as is to be seen at St. Augustine's Monastery, Canterbury, and in many other old buildings in that city? Why should not we of the present generation attempt at any rate to vie with our ancestors in this particular art, if such a use of the term may be permitted? In chalk countries where suitable flints are plentiful, field-labourers are generally to be found who have been taught the knack of splitting flints. In places where such is the case, a facing of split flints exceeds but little in cost that of forming a face of compo.

For cottages and outhouses, &c., a very clean and neat face may be given to the walls and ceiling by placing a course of pebbles on the exterior surfaces. The pebbles, when their outer surfaces have been freed from any compo that may have passed between them during the time of the setting of the concrete, form a surface that is agreeable to the sight and capable of receiving any amount of relief or ornament in compo, the surface being so admirably adapted to key the same. Little more need here be said on the subject of embellishment in concrete, as there are many members of the engineering and, doubtless, of the architectural profession also, who could and would design and build a structure wholly in concrete that would prove as pleasing to the great majority of persons of taste in such matters as if it were constructed with brickwork and stone.

Notwithstanding that the exhibits prove the great strength of Portland cement concrete, they present no data on which to calculate the exact strength of any particular piece of flooring or wall. Mr. John Grant, C.E., of the Metropolitan Board of Works, investigated the subject of the properties and strength of Portland cement, and has given the valuable and thoroughly reliable results to the world in papers read before the members of the Institution of Civil Engineers. The first paper was read by Mr. Grant in the session 1855–6, and will be found in the 25th volume of the Minutes of Proceedings of the Institution of Civil Engineers, and a second paper was read in the session 1870–2, and will be found in the 32nd volume of the Proceedings.

To attain uniformity in the strength of concrete, so essential in the construction of monolithic floors and roofing, it is advisable to adopt the French system of mixing; that is, gauging the cement and sand into a compo in the first instance, and then adding clean-washed shingle or burnt ballast, or a mixture of the two, in the proportion necessary, according to the nature of the work to be executed.

Great attention must be paid to the quality of all the materials used in making concrete in Portland cement, even to the water, which should be perfectly clean. The weight of the cement per imperial bushel should not exceed 116 lb., or be less than 112 lb., when dropped into the measure from a board fixed, say 2 ft. above the top of the measure. The sand should be rather large-grained, sharp, silicious sand, and must be washed perfectly free from loam or other extraneous matter. The shingle also should be washed free from particles of sand as well as of loam and other foreign matters. The thorough incorporation of the cement and sand is facilitated by mixing them dry under edge-runners for a period of five minutes for each portion of sand there is to one of cement before adding the water; thus, in the concrete for the floors, the writer would recommend the compo to be gauged one and a half of sand to one of cement, therefore it should be mixed dry under edge-runners for ($5 \times 1\frac{1}{2} =$) 7½ minutes. In the concrete for walls if the compo be gauged at two of sand to one of cement, the time of mixing dry should be ($5 \times 2 =$) 10 minutes; and when the nature of the work to be executed is such as to permit of the compo being gauged three of sand to one of cement, then the time must be extended to 15 minutes.

The prime cost of concrete varies considerably according to the site on which it is used and the nature of the work to be executed. Thick walls of a building in concrete, as in brickwork, are less expensive per cubic yard to construct than walls that are thin. Boundary or garden walls may be constructed with safety of concrete gauged in such proportions that each cubic yard contains only two bushels and a half of Portland cement and seven bushels of sand.

The public have the advantage of seeing in the exhibits two distinct materials used to form the body of the concrete—gravel and burnt ballast. Both make equally good and strong concrete; but perhaps concrete of burnt ballast is to be preferred for the construction of flooring and roofs. It is both lighter and better adapted to resist the action of fire than concrete of gravel.

The first cost of cottages in concrete, with concrete stairs, floor, and roof, is from 30 to 40 per cent. less than a building of brickwork, with slate roof and timber floors. Besides first cost, the cost of maintenance has to be taken into consideration in determining the actual value of any property. This is entirely on the side of concrete as a building material. There have been many cases where far larger sums have been expended, and fairly expended, in breaking up a piece of good concrete in cement than it cost in making.

To enable the reader to form an approximate idea of the cost of Portland cement concrete *in situ* in a cottage or two-story building, it may be mentioned that the cost for labour of all kinds should not exceed 2s. 9d., but say, 3s. per cubic yard, or 1*l.* 14s. per rod. The cost of Portland cement may be taken at 2s. 6d. per bushel delivered on to the works, including the cost of testing. The paper read by Mr. Grant

before the members of the Institution of Civil Engineers (see 25th volume of the Proceedings) concludes with a most needful warning from the author against the use of Portland cement, by any engineer or architect who is not prepared to take the trouble and incur the expense of thoroughly testing every bulk of cement on its delivery on the site of the works.

First-class concrete for floors and roofs, as has been shown, requires 4 bushels per cubic yard, or 45¾ bushels per rod, making the cost for Portland cement 10s. per cubic yard, or 5l. 13s. 6d. per rod.

Concrete of the second class, for walls of buildings, contains 3 bushels per cubic yard, or 34 bushels per rod, the cost of which is respectively 7s. 6d. and 4l. 5s.

In garden-walls and steps for stairs the cost of the cement is only 6s. 3d. per cubic yard, or a little less than 3l. 10s. per rod. Two bushels and a half per yard, or twenty-eight bushels and a third per rod, are thus all the cement that is required.

Should there be a pit of good clean gravel handy to the site of the works, to produce the necessary quantities of shingle and sand, the cost of the gravel to make one cubic yard of concrete should not exceed, say 15d., including carting, screening, and washing,—that is, 14s. 2d. per rod. When the cost of getting first-class gravel on to the ground exceeds 3s. or 3s. 6d. for the quantity necessary to make a cubic yard of concrete, it may prove more economical to burn clay from the foundations of the buildings, &c., and make burnt ballast.

The minimum cost of burning ballast when clay fit for the purpose is found on the site of the works may be put down at 3s. per cubic yard, including the cost of labour in sifting and washing, but not of providing the necessary quantity of water. The quantity of water required for washing and soaking burnt ballast is about 20 gallons per cubic yard, or a ton weight per rod. One half that quantity will suffice for washing good gravel, containing the proper proportion of clean sharp silicious sand; such only should be used in making concrete. The quantity of water requisite for gauging the compo is about three gallons per bushel of Portland cement and one gallon per bushel of damp sand.

The case will prove to be very exceptional where the cost of Portland cement concrete *in situ* in a building proves to be on the average less than 10s., or more than 16s. per cubic yard, i.e., 5l. 13s. 6d., or 9l. 1s. 6d. per rod.

PROPORTION IN PHYSICAL EDUCATION.

WHAT is the real aim of the physical education agitation? Do the agitators desire to inculcate the notion that it is superior to, and ought to take the precedence of, mental education, and is the only education in which it is worth while for humanity to graduate;—that a man's sole study should be how to become a muscular being, a giant in strength, a Hercules; or do they admit other considerations,—the claims of the intellectual faculties, to share with their physical their due of exercise and development?

It is important, in order to prevent further mischief, that these questions should receive concise answers. The notion that physical exercise and development may be urged to any extreme without detriment to vitality, without injury to the manhood, morally and intellectually is a most pestilent error. We cannot ourselves conceive of any but the most rabid enthusiasts in the cause, holding so exclusive and extreme a view, and to the mental and moral cost, as it inevitably must be, of the youth they discipline. But, we regret to say, there are many men who do,—from want of that deeper kind of thinking which would expose its fallacy and danger. To become real public benefactors, the out-and-out promoters of physical education must moderate their opinions, and desire to establish only such exercises and physical training as will conduce to health and beauty, as will develop that proportioned and balanced symmetrical condition in which well-being consists. The adjustment of the vital power, its due division between the intellect and physique, is fundamentally a proportionate adjustment, and we must thoroughly understand the principles of ontological proportion before venturing to advise, or daring to legislate, on any subject connected with education.

Disproportion in the human system is the result of the misleading or misdirection of the vital forces. We cannot conceive of either a being, or a system, perfectly proportioned, having a tendency to err. But disproportion once induced, by some extraneous influence, becomes in time a set and permanent source of error. Disproportion, in brief, is the cause of all evil. Disproportion in either mind or body, and between mind and body,—inequalities in social relation, unequal distribution of the means for education, and healthy recreation, disproportion of population to the requirements of industry—in fact, throughout the whole solar system, where there is aberration you shall find there is a disturbance of symmetry,—disproportion. We are not permitted to suppose that human nature was set and established in disproportion, and must conclude that this condition was induced by the misdirection and misuse of the humanity. We have now, if we desire to re-establish and rectify man in just proportions, to adopt a converse process, viz., by rightly directing and teaching him the moral use of his mental and physical faculties.

Disproportion, either in mind or body, and between mind and body, is sometimes congenital, at others, induced by injudicious training. It is also induced by the unwholesome conditions under which thousands and tens of thousands of human beings in a densely-populated country are compelled to exist,—conditions which render an equable, balanced, and natural life impossible to a large number of persons. The dangers to the disproportioned human argosy on the sea of life are as imminent as to overladen, untrimmed, unbalanced ocean-going craft. The more unbalanced the humanity, the more untrimmed the ship, the greater the probability of disaster and total wreck. It is the unbalanced, disproportioned natures in which desires arise, become uncontrollable, mar, and capsize the humanity.

If there is individual or personal responsibility, there is also a collective responsibility. The true legislative function of the State is, when analysed, to reform, re-adjust; or, in other words, to proportion society and men.

To educate men properly is to proportion them, and it is consoling to those who have this grand object in view, to know that human nature is sufficiently plastic and modifiable to render its rectification possible, and that there is always a tendency to reaction from any vicious extreme to aid the judicious teacher.

Accepting the science of proportion as the true basis of a rational system of education, we must, in the words of Shakspeare, say, "Let distribution undo excess," and endeavour to duly divide the vital force between the intellect and physique. To formulate the great principle of education and hygiene, we have only to slightly alter the wording of Bentham's famous political axiom, and declare that to be "the greatest health and strength to the greatest number of faculties." Now, "the greatest health and strength to the greatest number" is only to be attained by the equable and just exercise of all the faculties, both intellectual and physical; inequality in their exercise only being permitted when natural disproportions are to be remedied. All decadence, degeneracy, disease are manifested by either a local or general disturbance of the just proportions of health; by a disproportioned, unbalanced condition of the system. The whole aim and end of State Education should be the restoration of the people to that symmetry, to those balanced proportions in which well-being consists, in which health and beauty inhere.

The science of proportion not only points out that central ideal or moral form which a right system of education should endeavour to develop, that balanced constitution which qualifies for true citizenship, but how men, if need be, may be educated or trained for special purposes, for soldiers, sailors, &c., for callings in which physical strength is in greater request than intellectual—for preparing youth for such callings we may lay more stress on the physical than the mental training; or *vice-versâ*, when intended for the learned professions and the liberal arts, emphasise the intellectual. But in either case we must bear in mind that there has been a departure from the great central highway to a more or less bye or unbalanced condition, for which we must be prepared and make due allowance. *In medio tutissimus ibis* should ever be present to the educator, as it is to the wise in all mundane affairs. The golden middle course is the safest and best. The central, symmetrical, or balanced humanity is the most masterful humanity; for the mean or average condition is that which can be more readily than any other turned to any special purpose.

The English are, more than foreigners, prone to adopt a partial and one-sided view of a question, and to run their hobbies to extremes. This has been the case in respect to the advocacy of physical education. Muscular Christianity was a few years since to effect everything, to regenerate society. The consequence has been that the press and the medical profession have had to call the public to sober reason by directing attention to the fatal effects which ensue from an obstinate and persistent encouragement of physical education, to the exclusion of all those considerations which should mitigate and moderate it.

There does, at the first blush of the question, appear to be some plausible excuse for carrying physical exercise to extremes in the heyday of life; it is regarded in this case as a safety-valve for superabundant vitality. But we ought to remember that this is just the season of life for moulding mind and body into permanent forms, and that if the promoters of physical education at any price encourage it on this score, and under the conviction that no permanent injury will ensue to the youth so trained, they will, if they only study the laws of nature of proportion more attentively, be finally converted to the belief that physical education, promoted and carried out on their plan, would produce a permanent list in the humanity, tend to injure health, and shorten existence. Moreover, a safety-valve is a bad substitute for moral control, a substitute which does not elevate but degrade. If we are to institute a safety-valve for superabundant vitality, why not let the waste steam-vapour off in mental, instead of bodily effort? The country requires strength of mind more than strength of body, and the one development is as practicable as the other. But the moral nature is, *par excellence*, the balanced nature.

The error of the physical educator appears to lie in this, that he entertains the ridiculous notion that if you could succeed in making a man a Hercules in body, you would at the same time make him an intellectual giant,—a prodigy of health, and so on. Never was notion more opposed to nature, more falsified by our every-day experience. The vital force is in every man a fixed quantity, which may be turned in various directions,—all to one side if you please; but in this case there will be deficiency and weakness on the other. The ideal of education is, as we have before stated, equable distribution,—the greatest health and strength to the greatest number of faculties. We cannot, therefore, divorce the consideration of the subject of physical education from mental without leaving a tremendous loophole for error, or carry it on regardless of other considerations without permanently injuring English manhood.

W. C. T.

A NEW THAMES TUNNEL.

AT a special meeting of the Greenwich District Board of Works, Mr. Barlow, of Charlton, attended to explain the details of a scheme to provide a road and railway communication from East Greenwich, across the marshes, to Blackwall Point, and thence straight across the river by a tunnel to Poplar, thus forming a direct communication from the East India Dock-road, on the north side of the river, to the Woolwich and Greenwich road, on the south side. Mr. Barlow stated, as his opinion, that a tunnel of substantial build, and of dimensions suited to the large and important traffic which would pass through it, might be constructed at a cost less than the average cost of the bridges in the metropolitan area above London Bridge. On the north side there were five railway companies,—the London and North-Western, the Midland, the Great Eastern, the Great Northern, and the North London,—and there was a point on the railway near Canning-town, on the line owned by the Great Eastern, where all these companies had running powers; so that, by making a second tunnel for railway purposes and uniting it to the Great Eastern system at this one point, the whole of the five railway companies could be brought across the river and obtain direct access to Greenwich, Woolwich, &c., and also unite with the South-Eastern system. Mr. Barlow stated that until the subject was fully reported upon he was not prepared to speak definitely as to cost, but his impression was that if the Metropolitan Board of Works made the road by itself, the cost would be from 500,000*l.* to 600,000*l.*, but that if

it was made jointly with a railway-tunnel, its cost would be from 400,000*l.* to 450,000*l.* It was resolved to memorialise the Metropolitan Board of Works in favour of the project.

ACCIDENTS.

Fall of a Building at Woodhouse Junction.—During the last two months three stone houses have been in course of erection at this place, and they were nearly completed, when the whole of the gable, to the foundations, fell to the ground.

Fatal Accident with a Hoist-Chain at Dewsbury. At the works of Messrs. Machell Brothers, shoddy manufacturers, Dewsbury, the firm are erecting a five-story factory near their present works, in Cloth Hall-street, and the masonry is nearly finished. Four men were ascending in a steam hoist to the top story, and had all but reached it, when suddenly the hoist-chain broke, and the whole were precipitated to the ground, a depth of 60 ft. or 70 ft. One died in a few minutes, his body being shockingly mangled. The rest received frightful compound fractures of the legs and other injuries.

WORKMEN'S CLAIM FOR WAGES DURING ILLNESS.

MR. PATTISON, surveyor to the parish of Chelsea, recommended the vestry not to remunerate their workmen when absent through illness. He said he suggested this, as he had advised the men to form some sort of benefit club among themselves to assist those in need, and they took no notice of it.

Mr. Kingsbury said it was cruel and absurd to suppose that men earning only 16*s.* a week, and having families could spare any portion of it for benefit clubs. He moved that half the men's wages be paid during illness.

Mr. Birch strongly opposed such a motion, as he believed it would open the door to imposition.

A Vestryman said, if sick men were not allowed something from the vestry, they could claim it from the guardians.

The recommendation of the surveyor was eventually agreed to by a large majority of the vestry.

The parish, in the end, are likely to be the losers by this absence of charity, for the sick men, with their wives and children, will have no alternative but to go into the workhouse, and become paupers, perhaps for the remainder of their lives.

THE WASTE-NOT VALVE.

SIR,—The Waste-not Valves referred to in your article on July 4th, p. 557, are Messrs. J. Tylor & Son's patent, and only fixed and exhibited by me. W. SMEATON.

LOYALTY TO EMPLOYERS.

SIR,—Having been in the country for the last four months, I have missed seeing the journals. On my return to town, a notice of my "Record of Thoughts," &c. which appeared in the *Builder*, April 11, 1874, has been pointed out to me, in which mention is made of a betrayal of confidence on my part as to some literary assistance rendered to Sir M. Digby Wyatt. Now I must say that seems rather too severe upon me, although I am ready to admit, at once, that I ought not to have made public arrangements of a private nature. But in thinking of ourselves we are apt to forget what is due to others, and that was my case. Directly, however, I saw my fault, I hastened to make what reparation I could; and though I have not "cancelled" the aforesaid passages, I at once had them rearranged and reprinted, and have withdrawn the remaining copies of my first issue. No one has greater admiration of Sir M. Digby Wyatt's genius and abilities than myself; but the question at issue remains still the same, it seems to me, as to whether I assisted him or he assisted me? I have always contended for the right of every one to claim his own work and have it recognised. On the other hand, we have the great examples of Raffaelle and Rubens, to whom a quantity of work is ascribed which was in reality done by their assistants. The public benefit by such a system perhaps, and yet it has never seemed to me quite correct. It would take up too much space to go into the arguments *pro* and *con.* in question; but I am willing to admit that, in point of fact, every architect is, almost of necessity, obliged to merge the names of his assistants, and adopt the entire work as his own.

J. B. WARING.

VENTILATION OF LEEDS TOWN HALL.

SIR,—In the *Builder* of last Saturday you publish a letter signed "One who Knows," which is an attack upon my system of ventilation recently adopted by the Leeds corporation, evidently proceeding from the pen of some one whose motives would be more apparent to the public if he ventured to drop his anonymous mask—a course which I confidently predict he will not dare to adopt. As his letter is a series of misstatements concerning my patent, I must request you to give me sufficient space in your next issue to answer his attack, and to expose his ignorance.

"One who Knows," whilst admitting the perfect simplicity of my invention, says,—"All that is done is to cut away a portion of the window-sash, leaving an opening which acts with the same 'simplicity' and directness as the lowering of the window or the removal of one of the upper panes would do."

Will you believe, sir, that in the Leeds Borough Court,—the *test* building which I have ventilated to the satisfaction of the corporation,—there is not such a thing *as a single window-sash*, and that the fresh air is introduced by means of a series of rectangular tubes, in accordance with my patent? I must, at least, have window-sashes provided before I can cut them away; and unhappily for my assailant's statements, this desideratum has not been supplied in the room in which I have tested the worth of my invention.

He says, secondly, that my "system makes no provision for the removal of impure air." Does it not? At least, it not only provides, but insures, the continuous admission of pure air into the apartment ventilated, and until "One who Knows" has shown us how to cram the greater into the less, the public will be slow to believe that fresh air can be poured into an apartment in a continuous stream without the expulsion of the lighter foul air, which must be driven before it like chaff before the wind.

Lastly, your correspondent declares he is suffering from "chronic catarrh and sore-throat, as the result of the introduction of this system," and he therefore alleges that there is not that absence of draughts which I claim as the distinguishing feature of my invention. Strange that it should be left for a gentleman who does not dare to sign his name, to state in the columns of a London newspaper a fact so contrary to the experience of those who have tested my invention in Leeds. I beg, sir, to deny positively and distinctly that your correspondent is suffering through any defect in my system of ventilation, and I do so on the ground that from *all* who have tested it in Leeds,—from the borough magistrates (who sit daily in the court-room I ventilated, after it had baffled the attempts of everybody else); from their clerks; from the borough engineer; from the editor and proprietors of the *Leeds Mercury*, whose offices and writing-rooms have been ventilated by me; from Mr. Oxley, ex-mayor of Leeds, and head of the banking firm of Wm. Williams, Brown, & Co., in whose bank premises I have introduced my system; and from several other gentlemen of equal weight and equal experience, and equally above suspicion, I have a unanimous tendency that there are *no draughts* under my system, and that its adoption by them has been followed by none but beneficial results. MARTIN TOBIN.

THE LONDON HOSPITAL SATURDAY FUND.

SIR,—The council of the Hospital Saturday Fund cannot but regret the unfavourable notice of its motives and work contained in the *Builder* of the 4th inst. The reason for instituting a Hospital Saturday is the fact that a large proportion of the working men do not attend places of worship. This undeniable fact arises from various causes, which it is needless to go into. It was therefore thought desirable to institute a Hospital Saturday, *not* in opposition to Hospital Sunday, but in aid and extension of its charitable work. So far from wishing to confine the Hospital Saturday subscriptions to the working classes only, the Council will be most happy to receive subscriptions from all classes. What it especially desires is that those, to whatever class they belong, who do not subscribe to the Hospital Sunday Fund may be induced to aid the hospitals and dispensaries of the metropolis by subscribing to the Hospital Saturday Fund. Such a fund has been most liberally supported by the working classes in Manchester, Liverpool, Glasgow, and Birmingham, and it cannot, therefore, be an "impertinence"* to ask the working men of London to support a similar fund in the metropolis.

That the utmost aid possible may be given to the above-mentioned institutions is the sole motive which prompts the action taken by the Hospital Saturday Council, and certainly not any desire on the part of its members to "thrust themselves before the public."

We remain your obedient servants,

BRABAZON,
E. HAWKINS,
J. W. PROBYN,
GEORGE SAVAGE,
Hon. Secretaries of the Hospital Saturday Council.
EDMUND PARKER, Secretary.

SURVEYORS AND ENGINEERS.

IN a recent number of the *Builder*, a paragraph appeared with reference to the Sunderland Corporation's intentions to appoint a civil engineer in lieu of a surveyor.

Mr. Younger, the present Borough Surveyor, not liking the contemplated alterations for many reasons, desired of the Town Council an opportunity to refute the charges of inefficiency brought against him by the Committee, and that he was wanting in administrative ability and engineering skill; and the Committee having heard the surveyor's explanations, submitted the same report to the Council. The matter came before the Town Council at their last sittings.

Mr. Hugh Robson moved the adoption of the report, and cited instances wherein he alleged the Borough Surveyor had proved himself incompetent as a civil engineer; but Mr. Younger's faults, he said, were sins of omission rather than commission, for unfortunately their surveyor had not had a professional engineer's education. The report being seconded, it was warmly opposed by Aldermen Reed, Ranson, and others, all of whom concurred in denouncing the proposition as a great injustice to one of the oldest servants of the Corporation. It was agreed all round that the surveyor had served the borough faithfully in carrying out some most important works, and Alderman Ranson further dwelt upon the fact that the proposal emanated from the friend of a professional engineer who aspired to the position. On a division, five only voted for an engineer in place of a surveyor, and the report of the Committee was negatived by a large majority.

Public Improvements.—In reply to Mr. Goldsmid, in the Commons, Lord H. Lennox said the question of providing increased accommodation for the Government Departments was now under the consideration of Government, and he could not therefore give any pledge to preserve the block of buildings between the new Home and Colonial Offices in Parliament-street and St. Margaret-square. The plans for a new roadway from Hamilton-place to Grosvenor-place were not yet matured.

* We never said it would be.—ED.

CHURCH-BUILDING NEWS.

Melton Mowbray.—Harby Church is about to be restored. Mr. N. W. Johnson is the architect, and Mr. George Hayes, of Melton, is the contractor, for 2,200*l.* Mr. Hayes also secured the contract for alterations of Mr. Brewett's house at Old Guadaloupe, at 1,400*l.*; and Mr. Johnson is also the architect.

Worcester.—The foundation stone of the new Church of St. Margaret, in St. John's parish, Ladywood, has been laid at the corner of Ledsam-street and Alston-street. The cost of the new church will be over 4,000*l.* All the seats will be free, and accommodation is to be provided for about 700.

Wimblington.—The newly-erected Church of St. Peter at Wimblington has been consecrated. The church consists of nave, chancel, and chancel-arches, with south porch. It accommodates rather more than 300 people, with power at a future period to add 100 additional seats. The tower, surmounted by a spire, rises from the western compartment of the chancel to a height of rather more than 100 ft. The aisles are separated from the chancel by two arches on each side, with two columns in depth of red Monisfield stone, and choir. The roof of the chancel is groined with wooden ribs and boarding. The roof of the nave is open, the timbers wagon-headed. The total length internally from east to west is 95 ft. The seats throughout are low and open. The church is warmed by Messrs. Haden, of Trowbridge. The style is transition from Early English to Decorative. The main body of the wall is brick, faced with Ancaster rubble stone, having bands, at certain marked distances apart, of a brown or rust-coloured stone from Dunston. The whole of the dressings and tracery are of red-bed Farleigh Devon stone. The roofs are covered with stone seating from the Colley-Weston Quarries, Northamptonshire. The works have been executed by Messrs. Holland & Hannen, London; Mr. T. H. Wyatt being the architect. They have been superintended by Mr. Fowles, who, in a similar manner, has had charge of the Churches of St. John and St. Mary, in the parish of March. The carving has been done by Mr. Sanson, London.

Tempsford (*Bedfordshire*).—The parish church, which had been undergoing restoration for the past twelve months, has been opened. The aisles have both been re-built, with two new porches; the roofs of the nave and aisles are also new and re-leaded. A new stone parapet has been placed on the tower, with pinnacles at each corner, mounted with crockets and finials. The stone-work internally has been restored and the walls re-plastered. The seats are open benches of English oak, with square ends, copied from the original. Mr. Browning, of Stamford, was the architect employed; and Messrs. Law & Son, of Lutterworth, Leicestershire, the contractors; the stonework being executed by Mr. William Wade, of St. Neots, Hunts. Mr. Stuart, at whose cost the work is done, is also having a wall erected to the churchyard, which has been enlarged.

Longsight.—The foundation-stone of St. Clement's Church, Longsight, has been laid by the Bishop of Manchester. The new parish of St. Clement's is an off-shoot from St. Matthew's. In addition to the new church, a parsonage is to be commenced immediately, and the accommodation of the adjacent schools is to be greatly increased. The church will be built of brick, both inside and out; on the inside red brick, relieved with white. The plan comprises nave, aisle, chancel, and chancel aisle, with porch, and a staircase leading to an end gallery. The chancel is apsidal, with no window in its eastern face. At the other end of the long plot of land forming the site will stand the parsonage. The space between the church and parsonage will be laid out as a garden. The designs have been prepared by Messrs. Medland & Henry Taylor.

Ramsgate—A new church, erected in King-street, and dedicated to St. Paul, has been consecrated by the Archbishop of Canterbury. The edifice is in the Gothic style, and has been built by Messrs. Smith & Son, of Ramsgate, from designs prepared by Mr. R. Wheeler, of Tunbridge Wells. The church will seat 250 persons; it is 69 ft. in length and 30 ft. in width, and consists of a nave and one aisle. The total cost of the building, including the site, amounts to about 1,500*l.*

Salford Priors.—Salford Priors church has been restored from a condition of partial decay, and re-opened for Divine service. The church,

named St. Matthew's, has been restored from the designs of Messrs. T. D. Barry & Sons, of Liverpool. The amount of the contract was 200*l.*, and it is probable that a deficit of about 150*l.* will remain. The nave, which is 25 ft. high, had until recently two square-headed clerestory windows, and two other windows of similar character. These have been removed, as they probably formed no part of the original structure, and four foliated, triangular clerestory windows, have been inserted. A new porch has been added outside the Norman tower. The new roof of the chancel is composed of moulded ribs, divided by minor ribs into panels, and forming a pointed arch internally. The ceiling is finished in plaster, a cornice running from east to west, in which are placed angels with extended wings, and shields. This portion of the roof will be decorated at a future period. There is a reredos of Caen stone with black marble shafts, and ornamentation of Early English character. The chancel floor is paved with ornamental tiles. The western gallery has been removed, and the old pews have been replaced by low seats, part of the old oak material being used for sittings in the south aisle.

Millbrook (Southampton).—The new church dedicated to the Holy Trinity, at Millbrook, has been consecrated. The church is built upon a site given by Lady Barker Mill, immediately opposite the Old Manor House, and has been about two years in erection. The church is in the Early English style—or rather of the transition period between Norman and Early English—with nave and side aisles; chancel and chancel aisles, vestry, tower, and spire, but the realisation of this as a whole, has not been attained, owing to want of funds, the tower and spire being still unfinished. The church is of Swanage stone, with Farley Down stone dressings, and is 111 ft. 6 in. long; the chancel taking 39 ft. and the nave 72 ft. 6 in. The width of the nave is 54 ft. The height of the nave roof is 53 ft. The church will accommodate 700 people, and its total cost is estimated at 7,000*l.*, but work to the amount of 4,800*l.* only has at present been carried out. The architect is Mr. Henry Woodyer, of Guildford, and the builders are Messrs. Newman & Son, of Winchester. The works have been under the superintendence of a nephew of the architect, Mr. Coussmaker. The main west window is a two-light lancet, geometrically glazed, with tinted edgings, and there is a smaller one at the end of the north transept, in keeping with the others lighting the church. The chancel is lighted by a window of seven lancets, surmounted by a small diamond-shaped opening. The roof is open timbered, filled in with plastering, and is supported by beams of pitched pine. The nave walls are 32 ft. high; and the total height of the proposed tower and spire, when completed, will be 140 ft. The site for the church was given by Lady Barker Mill, who has also aided the work in various ways.

Books Received.

On Building Contracts: a Legal Handbook for Architects, Builders, and Building Owners. By EDWARD JENKINS and JOHN RAYMOND, Barristers-at-Law. London: H. S. King & Co. 1873.

THE title on the cover, "A Legal Handbook for Architects," probably led us to expect too much, and so we were a little disappointed with this volume when we first looked through it. Viewed, however, as an introductory treatise on Building Contracts, we may safely say that a large number of our readers will find the possession of it an advantage. As the authors themselves say, they do not seek to present an exhaustive treatise on the Law of Contracts, or to offer to the profession of architects a book of reference in all cases likely to arise out of their numerous and complicated relations with a great variety of persons or bodies corporate. In large and important cases nothing can in the long run prove so safe or so satisfactory as to refer for advice to some competent legal authority, and have the preliminaries and the terms of an agreement, or the effects of a certain course of action, premised with distinctness and authority. But cases are daily arising in the ordinary practice of an architect in which he desiderates some immediate authority to which he may at the moment refer, to inform him respecting the proper course to be taken in completing an agreement, or in meeting some emergency which has arisen. Moreover, it cannot but be useful that the legal decisions that have from time to time been given on questions affecting their practice should be brought together and classified in a compendious form for the information and assistance of the profession. And all this the work supplies.

In treating of taking out quantities the authors thus summarise the rules to be deduced from authorities, by which the transactions of the parties as to the quantities would be governed in the absence of any agreement to the contrary:—

"When an architect is employed to prepare plans and specifications for a new building, he is impliedly authorised to contract, as agent for his employer, with a surveyor to take out the quantities, such being the usage.

On the contract thus made by the architect the employer is liable.

But (the contract being conditional) if a tender be made and accepted, and the works proceeded with, the liability will shift, and the contract will then be taken to subsist between the builder and the surveyor.

In this case the surveyor is not the agent of the employer, or building-owner."

The Towns Improvement Clauses Act, 1847; parts of the Metropolis Management Act, the Building Act, Forms, General Conditions of Contracts, and the Schedule of Charges published by the Institute are given as an appendix.

The volume is dedicated by permission to the Royal Institute of British Architects.

The Complete Measurer of Boards, Glass, &c. By RICHARD HORTON. Second edition. London: Lockwood & Co., Ludgate-hill. 1874.

THE very long title of this work is as follows:—"The complete Measurer, setting forth the Measurement of Boards, Glass, &c., unequal-sided, square-sided, octagonal-sided, round Timber and Stone, and standing Timber; with just Allowances for the Bark on the respective Species of Trees, and proper Deductions for the Waste in hewing the Trees, &c.; with other essential Instruction to Timber-growers, Merchants, Surveyors, Architects, Stonemasons, and others. By Richard Horton. Second edition, with important additions."

The work seems to be something more than a mere compilation of numerous tables. The author is of opinion that the extant tables and systems are in many instances productive of serious loss to the seller, whilst in other cases they cause great loss to the purchaser; but the worst of it is, that both seller and purchaser are likely to be guided more by their respective interests in the adoption of a measuring-book than by its more strict accuracy. Ultimately, however, the right mode must prevail. We have used the improved and other tables in this volume, and have not observed any unfairness or inaccuracy.

It is surprising how the years go by without anything like a clear settlement either in word or idea as to what an inch square is, and how it differs from a square inch. In this second edition of Mr. Horton's work he says, to this end,—

"It is important that those who use the following tables should clearly understand the sense in which the terms inch and part are there employed. In the table of surface measurement the inch is to be regarded as the twelfth part of a square foot; it is a strip, 1 in. wide, cut from a margin of the square: this strip is therefore 12 in. in length, so that it contains 12 square inches; and it is the twelfth part of this quantity which is called a part: hence a superficial part is 1 square inch.

In solid measurement, the inch is to be regarded as the twelfth part of a cubic foot; it is a slice or slab, 1 in. thick, cut off a side of the cube; so that it contains 144 cubic inches; and it is the twelfth part of this slice which is called a part: hence a solid part is a stick of the material 12 in. in length and 1 in. square at the ends; it contains, therefore, 12 cubic inches."

VARIORUM.

The Sanitary Record: a Journal of Public Health (Smith, Elder, & Co.), is the title of a new weekly journal of the progress of hygiene in cities, towns, rural districts, mines, factories, and habitations; the food, water, gas supply, and drainage of towns and rural districts; the vital statistics of population; the influence on health of trades and occupations; and the operation of Acts bearing upon public health. It is to be edited by Mr. Ernest Hart, and publishes a strong list of contributors. Judging from the first number just now published, the conductors seem prepared to retraverse all the roads we have painfully trodden for many a long year. We cordially wish them success.——Professor Gruner, in the *Art Journal* for July, speaks thus as to early enamelling.—"The most recent researches have led to the conviction that enamelling was practised by the Egyptians and the Greeks, and that it was not only on earthenware and bricks that they used the *émail*, but that they were also acquainted with enamelling metal; although they cultivated at the same time another process, by which they filled with a coloured mastic, or with gems and glass pastes, the ornaments which they had cut in their metallic utensils and ornaments. It was not, however, before the beginning of the third century of our era that a classical writer, the Greek philosopher Philostratus, living at the court of the Emperor Severus, mentions the art of enamelling for the first time as 'practised by the barbarians near the ocean:' this was the encrusted enamel, called *émail cloisonné*, in use by the Celtic nations in the conquered Roman provinces. When an easily-melting glass, coloured by means of certain metallic oxides, is by heat vitrified on the surface, or in the cavities of gold, silver, or copper, it is called enamelling, and the coloured glass itself *émail*. In the earliest manner, called *champ cloisonné*, the outlines of a design were formed by placing wire, or thin plates of gold, edgewise to the object that was to be enamelled, and soldering them to the base, thereby forming cells, which were filled with the powdered enamel, a paste of which had been previously prepared by mixing it with pure water. So prepared, the work was exposed to a high degree of heat, that melted the glass. This *technique* was practised from the seventh to the tenth century in various parts of the Continent, when a second improved method was invented, whereby the outlines were no longer soldered to the main body, but in which they remained in the solid of the vessel, and those parts that had to receive the enamel were cut out, and then filled with the glassy substance. Gold was no longer used, but red copper, of which the outlines were gilt. The manner is known by the French term *champ levé*."——From the June number of Cassell's *Household Guide* we get some directions for preparing waterproof paper:—"Common paper, by a very simple process, may be converted into a substance as strong as parchment, by means of sulphuric acid. The paper is simply dipped in the acid; but the acid must be of an exactly determined strength, and mixed with half its bulk of water. A sheet of paper dipped in this liquid is almost instantaneously changed in character. It becomes tough, hard, and fibrous, but its weight is not increased, and it is far better for writing purposes than animal parchment. It can be rubbed better than paper, and almost as well as sheepskin, and it serves for vellum in bookbinding, and for all legal purposes, as well as animal parchment, for strong binding, and as a substitute for bladders to cover pickle and jam jars; and any paper that has ever been printed on may be converted, by means of sulphuric acid, into vegetable parchment. Paper can be made waterproof without giving it the character of parchment, by dissolving 24 oz. of alum and 4 oz. of white soap in 2 lb. of water; also, 2 oz. of gum arabic and 6 oz. of glue in 2 lb. of water. The two solutions are to be mixed, and the sheets of paper dipped into the mixture while warm. They are then to be hung up to dry, and pressed. This paper is very useful for packages exposed to the damp, or for any purposes connected with the preservation of articles from moisture."——"Easy Exercises in Arithmetic. By the Rev. James Harris, M.A., St. Catherine's College, Cambridge. London: Longmans, Green, & Co., 1874." The simple exercises are printed and published separately from the answers, which are issued as "Answers to Easy Exercises in Arithmetic. By the Rev. James Harris," from the same publishers.——"Metropolis Gas Supply: On the Chartered Gas Revision, 1874, by Arthur Silverthorne, C.E. London: Livermore & Robinson, Bedford-street, Strand, 1874." Mr. Silverthorne says of the late increase in the price of gas, after going through the whole matter *seriatim*:—

"It is consequently evident that the necessity for the present increase must be sought only in the enormous and extravagant nature of the present working expenses, which require some official kind of supervision beyond that of a mere audit. The prospect of gas-coal falling below 20s. 6d. can be depended upon with no degree of certainty, but that the residuals will suffer farther depreciation is likely, and consequently I cannot see how any material improvement can be expected further than that which has already taken place, and which would have justified the Commissioners in fixing a much lower price.

The remarks of the President of the Board of Trade, Sir Charles Adderley, in reply to a deputation on the subject, sums up in a remarkable way the exact situation, and suggests as his opinion that nothing short of further legislation can amend the present state of things.

That this excessively valuable suggestion will be taken up in the proper quarter there can be very little doubt; in fact, the City authorities, and the Metropolitan Board of Works, represented through their present eminent legal advisers, have watched over the interests of the gas consumers in the most assiduous manner, and but for their remarkable vigilance the inroads made by the companies would have been enormous; as it is, the Corporation of London have in particular been able to secure until now, for the consumers in the City, not only cheaper but better gas than is supplied in any other part of London, and free from many vexatious charges. It was hardly possible, however, to foresee that Commissioners might be appointed, taking such a distrustful view of the provisions under the City of London Gas Act, intended exclusively for the protection of the consumers."

——"Algebra identified with Geometry. By Alexander J. Ellis, F.R.S. London: Hodgson, Gough-square, Fleet-street." This is another book with a very long title, a small part of which is as follows: — "Algebra identified with Geometry;—that is to say, Ordinary or Commutative Algebra, including Incommensurables, Negatives, and Imaginaries, shown to be a purely Geometrical (and not a purely Arithmetical) Calculus, and the Higher Plane Geometry of Descartes, Pluecker and Chasles shown to be Particular Results of Ordinary Commutative Algebra, which includes the much more General Plane Geometry of Stigmatics; in a Series of Rough Notes, forming Five Tracts." The treatise is accompanied with a photo-lithograph table of geometrical figures.——"Some Remarks upon Roman Military Signaculæ, found in Britain." By Henry Charles Coote, F.S.A., is a reprint from the Transactions of the London and Middlesex Archæological Society, vol. iv. It is illustrated by three pages of engravings of Roman leaden and pewter seals, most of them found at Brough, in Westmoreland.

Miscellanea.

Change of Gauge for 200 miles in Three Days.—A great engineering feat has been accomplished by the Great Western Railway Company. Those who are old enough to remember "the battle of the gauges" will know how fiercely the contest was fought, and how warmly the two mighty engineers of the day, Brunel and Stephenson, defended their respective systems. The cautious Northerner was the advocate of the narrow gauge on the ground of economy, while Brunel argued for the greater efficiency and safety, combined with increased speed, to be secured on the broad-gauge system. The latter principle was adopted by the Great Western Company, and although it was found to possess all the advantages which were claimed for it, there were disadvantages which more than outweighed the benefits. The extra cost of rolling-stock and of engines of much greater power than ordinary, was enormous. Then, too, there was a difficulty about the interchange of traffic. There was no dispute as to the greater steadiness and consequent comfort, or of the increased speed, but these were results of which the travellers and not the shareholders reaped the substantial advantage. The consequence was that the broad gauge was doomed. The work of conversion has been done by stages. The last portion, which comprised the south-western section of the line between Swindon, Chippenham, Trowbridge, and Weymouth, and between Bath and Bristol, with the branches in conjunction, was successfully relaid and altered from broad to narrow gauge in the short space of three days. During that period no trains were run either for the conveyance of goods or passengers. It was a stupendous undertaking, and could only have been accomplished by most complete and systematic arrangements. At midnight the last of the broad-gauge rolling-stock was received at Chippenham, and at that hour an army of engineers and plate-layers, 2,000 in number, took possession of the line. The men worked in gangs, for eighteen hours at a stretch. Sheds were built for them where they could not get lodgings close at hand, and the Company gratuitously found a portion of their provisions, and paid them 1s. 6d. per day extra wages. All the rails, baulks, and transoms were prepared ready to be laid in position as soon as the old rails were removed, and the result was that the entire 200 miles were relayed within the time specified.

Wood Paving.—The Commissioners of Sewers of the City of London, at their meeting, ordered that the following streets should be paved with wood by the Improved Wood Pavement Company:—Bishopsgate-street Without, Aldersgate-street, St. Martin's-le-Grand, King Edward-street, and Angel-street.

The Healthfulness of Ascot.—Some of the people who visit Ascot intermittently on certain occasions would stop there if they knew how healthy and agreeable the neighbourhood is. The *Lancet* has recently given some striking particulars:—This favoured district, says the writer, stands upon the celebrated Bagshot sands, and doubtless owes its wonderful salubrity mainly to this circumstance. The vast bed of sand which underlies it is in most places several hundred feet in thickness, and is of course everywhere as porous as a sponge. In many places the sand is hardly covered, although in others a fertile soil has accumulated. With such a perfect natural provision for drainage, it is almost superfluous to say that the soil is dry. Rain disappears as fast as it falls, and house-drainage is got rid of so easily as to offer no excuse for the neglect of sanitary precautions. The supply of water is practically inexhaustible, and of excellent quality. It is commonly met with at a distance from the surface of about 20 ft., though occasionally, as at Collingwood Court, it lies at a much greater depth. Sir James Clark, who passed the last years of his life in this district, was always enthusiastic in its praise, and once said to Mr. John Waterer, of Bagshot, "In the circle of five miles round my umbrella you have the healthiest spot in the world." Few Englishmen know the wonderful and varied beauties of these wild downs, although they lie so near to the metropolis, and can be explored on any summer's day.

St. John the Evangelist, Holborn.—On Tuesday in last week, Lady Marian Alford laid the first stone of the church of St. John the Evangelist, at the corner of Red Lion-square, when a large company witnessed the ceremony. The Rev. Capel Cure, rector of St. George's, Bloomsbury, delivered an address, in which he said that during the past ten years they had not only built their parochial schools, and had purchased the site of the church, but had collected 9,000*l.* towards the building. They still, however, wanted 7,000*l.* to expend before the building would be ready for divine service. The church would be free, and open alike to rich and poor. The Rev. W. T. Thornhill Webber said that they had paid for the site of the church, but it had been thought desirable to acquire an additional site. The Bishop of London's Fund had come forward to aid them, and they had now 3,600*l.* in hand to pay for the foundations, for not having yet obtained enough money they had only contracted for so much of the work yet. They meant to have a building which should owe its beauty to its just proportions rather than to excessive ornament, but they would not have a mean building. The church will be built by Messrs. Kirk & Co., from the designs and under the superintendence of Mr. Pearson, architect.

Outrage at Manchester.—Information was given to the Manchester police of an outrage which was committed during Saturday night at a lodging-house at Miles Platting, near Manchester. Five brickmakers were sleeping in one room, when they were aroused by the smashing of their bed-room window, followed immediately by a startling explosion, the force of which threw two men who were sleeping in one bed on to the floor. The bed, which was overturned, was on fire, and when the flames had been extinguished the fragments of a bottle and a great many broken nails were found scattered about the room. The only lodger injured was a lad named Sines, who was rather badly scorched. An examination of the street outside the house resulted in the finding of a stone gingerbeer-bottle, which was loaded to the neck with gunpowder and nails. Attached to it was a fusee which sank deeply into the gunpowder. The outrage is ascribed to trade motives. The five men who were its victims are brickmakers, who are employed in turning out machine-made bricks under a contract for the Lancashire and Yorkshire Railway Company, and their doing so is known to have given great offence to the hand brickmakers in the neighbourhood.

The St. Pancras Vestry-hall.—The memorial stone of extra buildings at the Vestry-hall of St. Pancras has been laid. The new front will be in the Italian style of architecture, and three stories high. The ground-floor will be of stone, with polished grey granite columns at entrance, with special entrances for the Guardians and for outdoor paupers. The two upper stories will be of red bricks with stone dressings, surmounted by a clock in the centre, over which will be a statue of St. Pancratius.

Chicago Buildings.—The *Chicago Times* says,—It is a very good thing that the building business of Chicago has become dulled. Since the fire, Chicago has been flooded with irresponsible contractors, and architects, ignorant of the most necessary rudiments of their profession. These classes, owing to the great necessity of immediate rebuilding which occurred after the fire, found ready employment in Chicago. They have succeeded in inflicting everlasting damage on the city. The abortions of the latter have been produced as buildings; and the structures are rendered still worse by the ignorance and knavery of the men who build them. Not only is the city spotted with atrocious architectural designs, but also with buildings which, if not taken down within the next ten years, will fall from their own weight. The depression in the building business will have the effect to starve these people out. Now that the few men who are building are not hurried, they will look about, and see what has been done by those who apply to them for work. The result will be that bogus architects, and scalawag contractors will find themselves frozen out. A scarcity in any department of labour has the effect to retain only the more valuable element. The present depression is, therefore, of value.

Ebony from Sea-Weed.—An American periodical says:—It may interest some of our readers who reside near the sea-coast to learn that there is considerable commercial value in the common sea-weeds which are thrown up so abundantly on the shore. In addition to their uses as a manure, and for packing, quantities are now converted into artificial ebony. The process consists in first treating the plants for two hours with dilute sulphuric acid, then drying and grinding them up. To sixty parts of this product, five parts of liquid glue, five parts of gutta-percha, and two and a half parts of India-rubber are to be added, the latter two being first dissolved in naphtha. Afterwards ten parts of coal-tar, five parts of pulverised sulphur, and five parts of pulverised resin are added, and the whole heated to about 300° Fahr. When cooled, a mass is obtained which in colour, hardness, and capacity for receiving a polish, resembles ebony, and is much cheaper. This material is now actually made on a large scale, and used for nearly all the purposes to which ebony can be applied.

Suffolk Institute of Archæology.—The district lying between Bacton and Westhorp and the borough of Eye was that which the committee of the Suffolk Institute of Archæology selected for their excursion for the present year. Among those present were Lord John Hervey, the president, Rev. C. H. Chevallier, Mr. C. Fitch (Norwich), Professor and Mrs. Churchill Babbington, Rev. R. C. Manning (Diss), Mr. G. Thompson (Bury), Mr. Amyott, Rev. G. W. W. Minns, Rev. Dr. Lee (Thorndon), Rev. J. T. Hassall (Wattisfield), Rev. Stote Fox, Rev. A. B. Hemsworth, &c. Westhorp, Bacton, Cotton, and Menkesham Churches, Stoke Ash, and the churches of Thorndon and Braiseworth, and Eye castle and church were visited. A kind invitation from the vicar of Eye, the Rev. W. Page Roberts, to adjourn to the vicarage, where refreshments were provided, was gladly accepted, and this closed the proceedings of the day.

London Association of Foremen Engineers and Draughtsmen.—The half-yearly meeting of the above Association was held last week at the City Terminus Hotel, Cannon-street, Mr. Joseph Newton, C.E., presiding. The auditors' report and balance-sheet were read by Mr. Leith, which showed that during the half-year the members' contributions amounted to 107*l.* 7s. 6d.; the hon. members' life subscriptions were 53*l.* 5s: 364*l.* 4s. 2d. had been invested in the purchase of 400*l.* stock in the Three per Cents., and 107*l.* 1s. 6d. deposited in savings banks, which, with 22*l.* 4s. 6d., made the total of ordinary funds, 493*l.* 10s. 2d. After some routine business, Mr. Black (of Messrs. Black & Dobbie, Liverpool) read a paper on "Equilibrium Cabins and Turrets."

Banting's Memorial.—Under the will of Mr. Thomas Banting, who was buried in Broadwater Cemetery, near Worthing, on Monday, 60,000*l.* are left for distribution among various charities, and the residue of the estates (20,000*l.*) is left in trust for the establishment of a "Thomas Banting Memorial Institution," to enable convalescents to enjoy the benefit of the climate and sea bathing at Worthing.

Opening of an Industrial and Fine Arts Exhibition in Kentish Town.—An interesting exhibition was opened on Monday in last week at the training-schools, Wilkin-street, Kentish Town, under favourable auspices. The project was originated and has been mainly carried out by Mr. M. H. Wilkin and Miss Wilkin, the founders of the extensive middle-class training-schools in Wilkin-street. The school-rooms were utilised for the exhibition, which contained oil and water paintings lent by the artists or owners, a selection of architectural and other drawings, photographs, lithographs, prints, engravings, and specimens of wood-engraving, models of natural history, drawings, &c., from the permanent museum of the school, were brought out and shown. There were also specimens of plain and fancy needlework, wax-work, corkwork, straw, and paperwork processes of arts and manufactures, porcelain and articles of vertu, English and foreign curiosities, and works of industry of every kind. One of Morse's electric-telegraph machines was in work. Mr. M. H. Wilkin gave an explanatory lecture on the objects exhibited; and Miss Wilkin, and a staff of lady teachers attached to the schools were constantly in attendance. Pianoforte-music and part-singing were given at intervals, and light refreshments were provided. During the week lectures were to be given by Professor Smyth, Mr. Septimus Moore, Mr. M. H. Wilkins, and others, illustrated with diagrams and working-models, and a band of music was in attendance, and a concert given by the Literary Institute Choral Class. A bazaar was held, concurrently with the exhibition, for the benefit of the schools.

Window Gardening in Westminster.—The ninth annual flower-show of the Society for Promoting Window Gardening amongst the Working-Classes in the united parishes of St. Margaret and St. John, Westminster, has been held in College-gardens, Westminster. The president is the Dean of Westminster, vice-presidents the rectors of St. Margaret's and St. John's, the incumbents of the district churches in the united parishes, and Lord Hatherley. It depends for its existence in no slight degree upon the persistent efforts and sustained influence of Lady Augusta Stanley. The prizes given were 13 general and 108 local. The show was held in a large tent pitched upon the green, and ornamented within with flags and scrolls bearing texts, the plants being ranged upon a table running down its centre. They consisted chiefly of fuchsias and geraniums, with some calceolarias, musk, creeping-jennies, "old man," cacti, lilies, nasturtiums, houseleeks, and a few others of a more ambitious character. The duties of umpire devolved upon Mr. Annandale, who had been deputed by the Horticultural Society to perform this office. The Earl of Shaftesbury distributed the prizes, and presented a picture, the offering of the members of the flower-show, to Lady Augusta Stanley, as a token of the regard, affection, and esteem in which she was held. The band of the A division of police contributed to the afternoon's enjoyment.

Prehistoric Remains at Clickamier, Shetland.—The Loch of Clickamier, near Lerwick, on an island in which is situated one of the so-called Picts' castles, is being at present partially drained, and a considerable portion of the margin of the loch has been exposed to view. At the southern extremity, which is bounded by the "Air," or sea-beach, which separates the loch from the sea, two or three apparently artificially-arranged groups of stones have been found. In each case the stones are set on edge, and enclose a space somewhat grave-shaped, about 6 ft. or 6½ ft. in length, by from 18 in. to 24 in. in breadth. On digging into one of the enclosed spaces, two stone celts of small size were found. The enclosing stones are evidently *in situ*. The round tower or burg in the Loch of Clickamier, in the close vicinity, is one of the largest of the Shetland burgs, and was one of those scheduled in Sir John Lubbock's Bill.

Sir John Hawkshaw wanted in Brazil. Sir John Hawkshaw has received a commission from the Emperor of Brazil to proceed to his dominions for the purpose of surveying the extent of coast (about 5,000 miles) from Pernambuco to Campos, with the view of developing harbours and of mapping out lines of railway on the south-east coast of America. A part of Sir John's staff has already embarked, and he will leave this country early in August, and will not probably return to England before the end of the year.

Accident on the East London Railway Works.—An accident occurred at the East London Railway Works, by which five men lost their lives. It has been found necessary by the contractors for the works to underpin the main building of St. George's East Workhouse, owing to the peculiar nature of the soil through which the railway-tunnel has to pass, and its proximity to the building in question. For the purpose of the under-pinning operations several shafts have been sunk near the wall of the workhouse. The men were proceeding down one of the shafts at the north-east corner of the workhouse, when it was discovered that two men had fallen from the ladder to the bottom of the shaft. Others followed to rescue them, apparently not knowing or suspecting the cause of the accident; and, in spite of the shouts of one of the gangers near, six men in all descended the shaft to rescue their fellow-workmen. Besides the first two, three others fell to the bottom, and the sixth man was laid hold of just in time to prevent his death. The cause of the accident was an unexpected accumulation of foul air whilst the men were away at dinner.

The Fall of a Floor, New York.—The particulars of a shocking disaster, reported by telegram a short time since, have reached us. The scene of the calamity was the Central Baptist Church at New York. During the church festival, at which 500 persons were present, the church party-floor, 40 ft. square, in the second story, gave way, precipitating a number of persons down a fall of 15 ft., amid broken beams and clouds of suffocating plaster. Thirteen were killed on the spot and more than 100 injured. The crash having put out the gas, the work of rescuing the victims was performed in the dark or by the help of a few lanterns. The wreck was slowly cleared, timbers cut, and the sufferers taken out one by one. An examination of the building shows that faulty construction was the cause of the disaster. The wooden truss of the roof which supported the floors by iron rods was badly put together, and not cross-braced.

The Excavations at Durham Cathedral. These excavations are being continued. The apsidal termination of the Chapter-house has been more fully exposed, the remains of one of the buttresses having been brought to light. The buttress has the appearance of having projected but a slight distance from the line of the main wall. At some later time it appears to have been necessary to place a much deeper buttress next the shallow one of the original building. Two steps leading up to the episcopal chair, which occupied the centre of the apse at the east end, have also been discovered. It is intended, we understand, to clear out the whole of the area of the old Chapter-house. Several massive gold rings with sapphires and a bishop's crook, with remains of gold-worked vestments, have been found in stone coffins in the Chapter-house.

The Engineer of the City Sewers Commission.—At the last meeting a letter from Mr. William Haywood, engineer and surveyor, applying for an increase of salary, was read. It was to the effect that he had been in the service of the Commission for twenty-nine years, and that the last increase in his salary, to 1,500*l.* per annum, took place eleven years ago. The remuneration fixed eleven years ago was not productive of so many advantages at the present time as it was then. Mr. Deputy Stapleton said he believed that Mr. Haywood had given great satisfaction to every member of that committee during the years he had been with them, and he moved that the application be referred to the Finance and Improvement Committee for consideration and report. Mr. White seconded the motion, and observed that the engineer required no testimonial from him. The motion was carried.

Curious Effect of Lightning.—A flash struck the south-west pinnacle of the tower of Liberton Parish Church, knocking off a large piece of stone. There is a lightning conductor on the south-east pinnacle; but though only 14 ft. from the point struck, it was unaffected. A tree in Southfield grounds, Liberton, was shattered, and the bark peeled off, and several persons experienced a severe shock. At the hamlet of Stenhouse, 150 yards further on, the skylight of a house was broken by a flash of lightning, and a tailor, who was plying his craft there at the time, had the needle thrust into his hand by a shock of electricity, which is supposed to have struck his needle.

Working Men's Dwellings Bill.—Besides the Labourers' and Artizans' Dwellings Bill, introduced into the House of Commons, there is another which the Earl of Shrewsbury is conducting through the House of Lords, and the object of which is to enable Corporations and other bodies having land to clear it for sites upon which are to be erected dwellings for the working classes. This Bill is based upon the system which has been in operation for some time in Edinburgh and Glasgow. It has been read a second time in the Lords. The Bill in the Commons, as we have already said, is a very short one as to borrowing, by owners of real property and others, from the Public Works Loan Commissioners, for the erection of working-class dwellings.

The New Harbour Works at Anstruther, in Fifeshire.—Since their recommencement last year, these works have made steady progress, and there is now a good prospect of their speedy completion. The western breakwater, which is built wholly of concrete, has been completed without any damage from storms, and, in accordance with the recommendation of Sir John Hawkshaw, C.E., the Treasury engineer, a number of concrete blocks are being placed at the back of it, in order to catch the sea as it is thrown from the point of the east pier, which overlaps the breakwater. The outer section of the new east pier, which was overthrown by a storm two years ago, is being rebuilt, about 80 ft. of the most exposed portion being of concrete, and it is believed that it will now be strong enough to resist the force of the waves during any storm. The works were commenced in 1866, and have already cost upwards of 60,000*l.*

A Hint about Looking-glasses.—The *Trade Bureau* (U.S.) says,—"It is a fact well worth knowing, but which does not seem to be generally understood, that the amalgam of tin-foil with mercury, which is spread on glass plates to make looking-glasses, is very readily crystallised by actinic solar rays. A mirror hung where the sun can shine on it is usually spoiled; it takes a granulated appearance familiar to housekeepers, though they may not be acquainted with the cause of the change. In such a state the article is nearly worthless, the continuity of the surface is destroyed, and it will not reflect outlines with any approach to precision. Care must therefore be exercised in hanging." Care should also be taken in selecting looking-glasses; we have seen many lately, and from first-rate manufacturers, too, which make every straight line round. There is something wrong in the manufacture which requires looking into.

Surveyor to the Rugby Board.—Mr. John Earle Palmer, who for eleven years was surveyor to the Rugby Local Board of Health, having recently left Rugby to occupy a similar position at Malvern, his friends at Rugby resolved to present him with some memorial of his residence here. For this purpose, a gold chronometer was made expressly for the occasion, bearing a monogram outside the case, and a suitable inscription inside. Mr. H. Bennett entertained Mr. Palmer and a party of friends to dinner at his residence, New Bilton, and afterwards, in the name of the subscribers, presented the watch, with earnest and sincere wishes for the future welfare of the recipient. Mr. Palmer, in reply, spoke feelingly of the many friendships he had made during his residence in Rugby, and of the pleasant recollections he took with him to his new sphere of duties.

Bethnal-green Museum.—Colonel Lane Fox has added to the art treasures already deposited in the Bethnal-green Museum his extensive and valuable ethnological collection of curiosities. It embraces the rudest implements of the prehistoric era, and the earliest efforts of American and Australian savages, and it brings down the progress of ethnological history to the scientific tools and implements of modern times. The collection is intended not only for exhibition, but also for instruction, and it is arranged to deliver lectures on the subject of ethnological study at the museum to working men on Saturday evening

Steam Fire Engines.—The directors of the East and West India Dock Company in order more fully to protect the property in their warehouses, have entrusted Messrs. Shand, Mason, & Co., with an order for two of their improved steam fire engines. They will be similar to those supplied to the Indian States Railway, and to three recently supplied to the Metropolitan Fire Brigade, and tested by Captain Shaw.

Opening of a New Church in Belgravia. The new church of St. Mary, Graham-street, Eaton-square, has been opened for divine service. This church, as our readers may recollect, is built immediately over the Metropolitan District Railway, and although trains are running underneath it every minute neither sound nor vibration, we are told, is perceptible. The church is built of red brick and stone, and will hold 510 persons. Over the altar is a large sculptured reredos, representing Christ on the cross, with the Virgin Mary on the right, and Saint John on the left. The communion-table is of cedar, the slab being of yellow Mansfield stone. The font is another piece of stone-work, with quatrefoils filled with mosaics. The roof is stencilled, and coronal lights and brackets are suspended from it. The cost of the edifice is over 6,000*l.*

The Liverpool Borough Engineer's Waste-water Meter.—Mr. F. J. Bramwell, C.E., has, at the request of the local water committee, examined and reported on the waste-water meter recently patented by Mr. Deacon, the borough and water engineer. The report is favourable. Mr. Bramwell believes the meter to be effective; and he concludes his report by saying:—"I have no hesitation in advising the water committee of the Town Council of Liverpool to employ Mr. Deacon's waste-water meter in all their districts; and I have no doubt that if this be done, not only will the average expenditure per head be most materially diminished, but that that diminution will be accompanied by all the benefits and all the simplicities in service attendant upon a constant supply."

Moorfields (R.C.) Chapel. — In consequence of the excavation necessary for the extension of the Metropolitan Railway eastwards towards Bishopsgate-street, the southern walls of the church so long used by the Roman Catholics of London as a "Pro-Cathedral" at Moorfields have lately exhibited some alarming cracks, in consequence of which the edifice has had to be "underpinned" for fear of its tumbling down. It is now closed, and notices have been placed on the walls in conspicuous places, informing the public that such is the case, "in consequence of an award of the arbitrators between the trustees of the church and the Metropolitan Railway Company."

New Monument in Hodnet Church.—An addition has just been made to the monuments in Hodnet Church. In 1870 a memorial chapel was erected on the north side of the Patron's Chancel, over the newly-made vault of the Heber Percy family. A marble altar tomb has been placed in the centre of the chapel, with a recumbent figure of the late Miss Heber Percy, of Hodnet Hall. The inscription is in raised letters round the tomb. At the foot, in colours, is a shield displaying the armorial bearings of the deceased young lady. The chapel is now separated from the church by floriated iron gates. The monument was executed by Mr. Dodson, of Shrewsbury.

Cottage Hospital for Wells. — At the Bishop's Palace a meeting has been held at which it has been resolved to establish a cottage hospital for Wells; and a list of subscriptions was opened, amounting to about 100*l.*, besides annual subscriptions to about 50*l.* The Bishop stated that 150*l.* per annum would be requisite, and about 300*l.* to begin with for a building.

New Indian Museum.—The *Athenæum* hears that the Secretary of State for India in Council has at last granted the money required for building a new museum and library upon the vacant ground opposite the India Office. The sum is said to be somewhere about 75,000*l.* There seems to be little doubt that the museum will be lodged at South Kensington during the erection of the new buildings.

The Leicester Municipal Buildings. The works on the lower story of these buildings are now in an advanced state, and, in accordance with a report and recommendation of the Municipal Buildings Committee, the Town Council have resolved to lay the chief stone, with some ceremonial and holiday observances, on the 6th of August, by the hands of the Mayor.

Rating of Tramways.—Mr. Edlin, Q.C., as chairman of the Court of General Assessment, has given judgment on the appeal of the London Tramway Company against an assessment of their line made by the parish of St. Mary, Lambeth. The gross estimated rental was reduced from 6,290*l.* to 4,141*l.*, and the net rateable value from 5,890*l.* to 1,823*l.* There was no order made as to the costs of the appeal.

A Journal of American Architecture.—The American Institute of Architects have arranged for a journal to be published by Messrs. Jas. R. Osgood & Co., Boston, and the committee are now calling for the first instalment of drawings and literary matter. The committee say that illustrations of unexecuted as well as of executed work will be acceptable, as will also plans and sections in addition to the elevations and perspectives of any submitted design. "Available designs will include bridges and other constructions, sometimes classed as engineering work; as also furniture, wall decoration, and coloured glass; and, in short, examples of any speciality giving opportunity for artistic treatment and allied to architecture."

The late Mr. Henry Godwin, of Newbury.—Mr. Henry Godwin, whose lamented death at his residence, Speen-hill, Newbury, Berkshire, has been announced, was a keen and instructed antiquary, as well as an estimable and excellent man in all the relations of life. He was a Fellow of the Society of Antiquaries, and an active member of the British Archæological Association; usually attending the congresses and contributing freely from the stores of his information. We regret the loss of an old friend and useful member of society. He will be remembered as the author of the Handbook of Archæology.

The Hanley Borough Surveyor.—At a recent meeting of the Hanley town council, pursuant to the recommendation of the committee, Mr. Alderman Ridgway moved that the salary of Mr. Lobley, the borough engineer and surveyor, be increased to 300*l.* per annum, from the 24th of June, 1874. He congratulated Mr. Lobley on the services he had rendered to the town, and said he thought that as the borough derived great benefit from those services, they were justified in raising his salary. Mr. Alderman Stephenson seconded the motion. After some discussion the motion was carried.

West Cheshire Labourers' Dwellings.—Mr. J. A. Davenport, sanitary inspector to the Nantwich Rural Sanitary Authority, has presented another report to the Board, similar in urgency to the last; but, in this case, alluding particularly to the township of Bickerton, containing a population of 400. He says there are but few cottages in the township that can be said to be well and conveniently constructed, and to have fairly good arrangements outside. The Board discussed the matter, and ordered the inspector in all cases to summon occupants of the houses if the orders for removal of the nuisances are not attended to forthwith.

A New Roman Catholic Hall for Liverpool.—It is proposed to erect a new Roman Catholic Temperance League Hall for Liverpool. This is to be done by a limited liability company, the capital of which is to be 10,000*l.*, raised in shares of 1*l.* each. A central hall has become a necessity for the efficient working of the League. The hall will be capable of holding at least 4,000 persons, and will be in a central situation and convenient for the labouring classes. A plot of land has been purchased in the new part of St. Anne-street. The directors will, in course of time, open a reading-room, refreshment-rooms, and recreation-rooms, supplied with such games as may be deemed prudent.

New African Expedition.—It is announced that arrangements have been concluded between the proprietors of the *Daily Telegraph* and *New York Herald* to despatch an expedition to Africa, to report upon the haunts of the slave-traders, pursue the discoveries of Dr. Livingstone, and complete, if possible, the remaining problems of Central African geography. This expedition will be under the sole command of Mr. Henry M. Stanley.

The late M. Van de Weyer.—The Communal Council of Louvain, M. Van de Weyer's place of birth, has resolved to give his name to one of the principal streets of the town, to place a commemoration tablet on the house where he passed his childhood and where his mother kept for many years a reading-room, and to invite subscriptions for erecting a bronze statue of him in one of the squares of Louvain.

The Phosphate Sewage Company.—The directors of this company having recently entered into a contract with the Corporation of Hertford for the treatment of the sewage of that town, and being in negotiation with several other towns with a view to prevent the pollution of rivers, made a demonstration of their process in the grounds of the International Exhibition on Wednesday last.

TENDERS

For Convalescent Hospital, Seaford, Sussex. Mr. E. A. Gruning, architect. Quantities by Messrs. E. Bives and T. Nixon:—

		Fittings included in these amounts.
Lawrence	£7,598	£375
Nash & Co.	7,564	283
Cullum	7,200	274
Nixon & Son	7,150	365
High	6,997	250
Howell	6,873	305
Vidler (accepted)	6,868	290

For alterations and additions to boys' school, Henfield. Mr. R. Adolphus Came, architect:—

Mighall	£405	0	0
Ferry	333	0	0
Martin (accepted)	329	0	0

For whitelead and colour warehouse, Mack's-road, Bermondsey, for Messrs. Robinson & Anderson. Quantities supplied by the architect, Mr. W. T. Hollands:—

Tarrent	£804	0	0
Preston	766	10	0
Ashton (accepted)	760	0	0

For painting and decorative work at the Vestry-hall, St. George's-in-the-East:—

Clearer	£399	10	0
Charlton & Martin	275	0	0
Derby	268	0	0
Ennor	260	0	0

For alterations and repairs to Wesleyan Chapel, Great Queen-street, W.C. Mr. Pocock, architect. Quantities not supplied:—

Kempling	£900	10	0
Hobson	846	0	0
Stains & Son	846	0	0
Little	750	0	0
Godson	744	0	0
Charlton & Martin	725	0	0
Niblett & Son	700	0	0

For water-pipes, drainage, and reservoir, for Rural Sanitary Authority of Wincanton:—

Iron Pipes.

Newman	£2,004	0	0
Willcocks	1,600	0	0
Taylor & Co.	1,520	0	0
Spittle	1,440	0	0
Neave & Co.	1,360	0	0
Kerslake	1,356	0	0

Reservoir.

Willcocks	£1,465	0	0
Sweetman	740	0	0

Drainage Works.

Newman	£2,924	0	0
Cowding & Son	2,757	0	0
Willcocks	2,623	0	0
Neave & Co.	3,081	0	0
Hall	2,647	0	0
Sweetman	2,216	0	0

For enlarging the Royal Masonic Institution for Boys, Wood-green. Mr. Dennison, architect. Quantities by Mr. Barnett:—

Carter	£2,045	0	0
Cohen	1,870	0	0
Sawyer	1,856	0	0
Linzell & Son	1,820	0	0
Sheffield	1,792	0	0
Crockett	1,646	0	0
Niblett & Son	1,635	0	0
Humphreys & Son	1,600	0	0
Bangs & Co.	1,599	0	0
Harris	1,592	0	0
Wagner	1,561	0	0
Boyce	1,488	0	0
Botting	1,464	0	0
Hunt	1,443	0	0
Stamp & Bowtle (accepted)	1,325	0	0

For printing-offices for Messrs. Diprose, Bateman, & Co., Lincoln's-inn-fields. Messrs. J. & S. F. Clarkson, architects. Quantities supplied:—

Dove, Brothers	£1,795	0	0
Thorne & Co.	1,767	0	0
Brass	1,698	0	0
Wilson, Brothers	1,689	0	0
Howard	1,685	0	0
Macey	1,650	0	0
Foxley	1,617	0	0
Patman & Fotheringham	1,598	0	0
Cooke & Green	1,593	0	0
Falkner	1,587	0	0
Merritt & Ashby	1,577	0	0
Nightingale	1,575	0	0
Stoner	1,557	0	0
Lathey, Brothers	1,547	0	0
Kelly, Brothers	1,523	0	0
Waldram & Co.	1,503	0	0
Conder	1,498	0	0
Simpson & Baker	1,474	0	0
Hudson & Co.	1,473	0	10
Axford	1,455	0	0
Langmead & Way	1,400	0	0

Accepted for completing new mansion, and building new hunting-stables, for the Right Hon. Lord Walsingham, Aldwark Hall. Mr. W. Lewis, architect:—

Almgill (bricklayer)	£485	0	0
Harrison (joiner)	212	0	0
Baynes (slater)	86	0	0
Hodgson (plumber)	90	7	6
Walker (stable fittings)	75	14	0
Bowman & Co. (masons)	36	15	6
Dove & Sons (ironmongery)	20	5	0
Gowland (stainer)	29	0	0

Interior of Mansion.

Hellerby & Co. (joiners, &c.)	£79	0	0
Weatherley & Rymer (terrace steps and gate piers)	56	0	0
Worthington (decorator)	478	3	3
Milburn (carving)	17	0	0

For new stables and additions to mansion, for Colonel Herbert, Upper Helmsley Hall. Mr. Wm. Lewis, architect:—

Schofield (joiner)	£624 0 0
Walker (bricklayer)	483 10 0
Carlill (slater)	112 15 0
Cook (for clock, &c.)	61 10 0
Walker (stable fittings)	119 3 0
Milburn (carver)	12 16 0
Weatherley & Rymer (masons)	112 0 0
Hartley (plumber and engineer)	336 16 0
Rawling (plasterer)	106 0 0
Wilkinson (concrete)	80 19 8
Hartley (painter)	66 2 0
Farnley & Co. (sanitary pipes)	40 0 0
Bollant (zinc work)	12 0 0

For stone entrance to Manor House and New Home Farm, for the Hon. Egremont Lascelles, Middlethorpe Manor. Mr. Wm. Lewis, architect:—

Bellerby & Keswick	£435 0 0

For stone covered way and porch, and new wing, for Captain Hall, Ivy House, Acomb. Mr. Wm. Lewis, architect:—

	New Wing, &c.	Covered Way, &c.
Weatherley & Rymer	£374	
Harrison & Hebden		£85

For new residence for Dr. Wilkinson, at Rowland-hill, Pocklington. Mr. Wm. Lewis, architect:—

Grant	£1,217 10 0

For rebuilding the Waterloo Arms Tavern, for Mr. Karslake. Messrs. Berriman & Son, architects. Quantities supplied:—

Falkner	£2,477 0 0
Sawyer	2,424 0 0
Kent	2,397 0 0
Thompson	2,380 0 0
Minard	2,333 0 0
Cooper	2,189 0 0
Kirk	2,177 0 0
Downs	2,169 0 0
Cook	2,145 0 0
Cullum	2,140 0 0
Linfield	2,133 0 0

For rebuilding the Smiths' Arms Public-house, Park-street, Borough. Mr. H. Lovegrove, architect:—

Cobbett	£1,643 0 0
Stone	1,492 0 0
Downs & Co.	1,480 0 0
Stimpson & Co.	1,390 0 0
Scrivener & White	1,342 0 0
Nightingale	1,327 0 0

For new stables at the City of Gloucester, Chelsea. Mr. H. J. Newton, architect. Quantities supplied by H. W. Budd:—

Taylor	£443 0 0
Hockly	439 0 0
Brindle	426 0 0
Shurmur (accepted)	423 0 0

For alterations to billiard-room at the Kemble's Head, Bow-street. Mr. H. J. Newton, architect:—

Hockly	£149 0 0
Shurmur	147 0 0
Taylor	129 0 0

For alterations and repairs to Nos. 8 & 9, York-place, W., for Bedford College. Mr. E. Roole, architect:—

Lathey Brothers	£3,200 0 0
Longmire & Burge (accepted)	2,930 0 0
For Gas-fittings.	
Benkert	£120 0 0
Strode & Co. (accepted)	85 0 0

For new Congregational Chapel, Anerley-road, Penge. Mr. Geo. Elkington, architect. Quantities supplied:—

Downs	£12,005 0 0
Rider	11,934 0 0
Dove, Brothers	11,835 0 0
Hill, Higgs, & Hill	11,850 0 0
Carter & Son	11,808 0 0
Waldram & Co.	11,794 0 0
Browne & Robinson	11,410 0 0
Bowyer & Sons	11,374 0 0
Little	11,298 0 0
Roberts	10,437 0 0

For the construction of a complete system of sewers, and for laying out 40 acres of land on a chemical and intermittent filtration process for the Local Board, Wimbledon. Mr. Wm. F. Rowell, engineer. Taking the following tenders from the list, the total amounts will be as under:—

Dickenson	£46,363 19 2
James Neave & Son	42,206 14 9
Potter (with others)	42,036 14 10
John Neave & Son	41,740 15 8

For addition to house at Snaresbrook, for Miss Cox. Mr. J. O. Abbott, architect. Quantities supplied by Mr. Jackson:—

Waldram & Co.	£959 0 0
Jackson & Shaw	940 0 0
Manley & Rogers	880 0 0
Cuthbert	878 0 0
Downs	876 0 0
Enor	861 0 0

For alterations and additions to No. 15, Hyde Park Gate, Kensington Gore, for Mr. Jacques Blumenthal. Mr. E. Power, architect. Quantities supplied by Mr. W. Barnett:—

		Extra for Wainscot Staircase.
Thompson	£4,166	£193
King & Son	3,680	175
Fish	3,300	145
Adamson & Sons	3,293	160
Sharpington & Cole	3,290	163
Rider & Son	3,262	136
Sewell & Son	3,180	153
Brass	3,167	120
Colls & Sons	3,149	145
Newman & Mann	3,116	146

For residence and wall at Dulwich, for Mr. A. C. Rich. Messrs. John Young & Son, architects. Quantities prepared by Mr. A. L. Buzzard:—

Burrows & Brooker	£2,047 0 0
Lawrence	1,939 0 0
Hart	1,932 0 0
Newman & Mann	1,902 0 0
Robins	1,810 0 0

For additions, &c., for grain warehouses, York, for Mr. J. Belland. Mr. Lewis, architect:—

Whole Tenders.

Keswick	£499 16 0
Weatherley & Rymer	484 0 0
Gray	440 0 0

Single Tenders (accepted).

Sparling (brick, plaster, & stone)	£237 4 10
Gray (joiner)	68 10 0
Dickenson (plumber)	29 0 0
Lee (painter)	30 0 0
Carlill (slater)	3 15 0

For new girls' school and class-room, and two teachers' residences, at Hounslow Subscription Schools. Messrs. Tress & Innes, architects:—

	Schools.	Teachers' Residences.
Gorvinge	£1,440	£1,015
Bray	1,121	1,023
Richards	1,139	906
Reavell	1,067	893
Nias	1,019	929
Wills	1,067	877
Hiscock	1,010	833
Taylor	980	900
Brunsden	953	824
Simpson & Baker	997	764
Seal	927	791

For taking down and rebuilding No. 158, High-street, Borough. Mr. J. H. Swan, architect:—

Pritchard	£3,010 0 0
King & Son	2,880 0 0
Thompson	2,868 0 0
Perry	2,840 0 0
Rider & Son	2,780 0 0
M'Lachlan	2,635 0 0
Dearde	2,430 0 0

For certain works to premises known as Barbican Chapel, for Mr. J. Spawforth. Messrs. Parr & Strong, architects:—

Parsons	£4,333 0 0
King & Son	3,870 0 0
Adamson & Sons	3,683 0 0
Bangs	3,450 0 0
Robinson	3,232 0 0

For the erection of a warehouse, No. 50, Leadenhall-street, for Messrs. Field & Tuer. Mr. J. T. Newman, architect. Quantities by Messrs. Curtis & Sons:—

Rivett	£2,350 0 0
Cooke & Green	2,050 0 0
Foster	2,045 0 0
King & Son	2,045 0 0
Elkington	2,010 0 0
Sharpington & Cole	1,977 0 0

For rebuilding No. 51, Titchfield-street, Oxford-street. Messrs. Ebbetts & Cobb, architects:—

Longmire & Burge	£1,390 0 0
Nightingale	1,371 0 0
Macey	1,230 0 0
Atchinson & Walker	1,145 0 0
Perkins (accepted)	1,063 0 0
Hyde (too late)	950 0 0

For vaults and foundations, No. 48, Mark-lane, for Mr. J. Dawson Kiddell. Messrs. Young & Son, architects:—

Ashby & Horner	£3,059 0 0
Lawrence & Sons	3,042 0 0
Young	2,990 0 0
Brass	2,985 0 0
Condor	2,905 0 0
Lawrance	2,840 0 0

For public hall at Newport, Monmouthshire, for Messrs. Ewins & Son. Messrs. A. O. Watkins & Son, architects:—

Welch	£7,800 0 0
Miles	7,307 0 0
Richards	7,250 0 0
Jenkins	7,200 0 0
Tinton	6,934 0 0
Dover, Sons, & Co.	5,594 9 0
Diment (accepted)	5,299 0 0

St. John the Baptist Church, Brighton.—For "Batching & Webber," read *Patching & Webber.*

TO CORRESPONDENTS.

Architect (we decline to correct a misprint wholly due to the atrocious writing of our correspondent, resulting from a sort of insolent carelessness).—W. T. (thanks).—R. S. (next week).—J. M. (next week).—O. (shall have attention).—C. & M.—T. N.—Messrs. H.—W.—H. C.—W. R.—E. D.—R. W.—T. W. A.—M. T.—W. S.—H. R.—W. F. R.—J. J. L.—Y. H. & Co.—J. L.—R. F.—A. T.—H. C.—M.—J. T.—F. R.—Mr. B.—W. L.—R. E. P.—R. H.—W. R.—U. H.—J. W. & Co.

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